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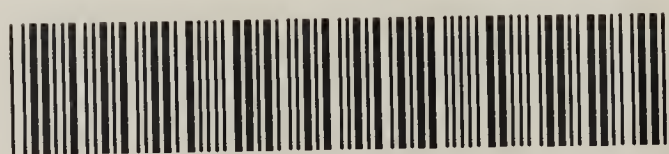
ANNUAL REPORT

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MINISTRY
OF
HEALTH

2001-11-20



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REPUBLIC OF SINGAPORE

REPORT OF THE
MINISTRY OF HEALTH
for the year ended 31st December, 1965

BY THE ACTING PERMANENT SECRETARY/DIRECTOR OF
MEDICAL SERVICES.

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CONTENTS

<i>Chapter</i>	<i>Page</i>
INTRODUCTION - - - - -	1
PART I—GENERAL	
1 LEGISLATION - - - - -	5
2 STAFF AND TRAINING - - - - -	6
3 THE MEDICAL REGISTER - - - - -	9
4 FINANCE - - - - -	10
5 VITAL STATISTICS - - - - -	12
Population — 1911–1965 - - - - -	12
Population Estimates — Racial Group and Sex - - - - -	13
Births — Sex, Race, Mother's Age, Registration Area and Residence - - - - -	15
Deaths — Age, Sex, Race, Registration Area and Residence - - - - -	17
Birth and Death Rates - - - - -	22
Infant Mortality and Infant Mortality Rates - - - - -	23
Still Births and Still Birth Rates - - - - -	23
Maternal Mortality and Maternal Mortality Rates - - - - -	23
Migration Statistics by Sea and Air - - - - -	24
PART II—PUBLIC HEALTH DIVISION	
6 INTRODUCTION - - - - -	27
7 THE ENVIRONMENTAL HEALTH SERVICES - - - - -	41
8 THE QUARANTINE AND EPIDEMIOLOGY BRANCH - - - - -	62
9 THE SCHOOL HEALTH SERVICE - - - - -	74
10 THE MATERNAL AND CHILD HEALTH SERVICES - - - - -	86
11 TRAINING AND HEALTH EDUCATION - - - - -	92
12 HAWKERS AND MARKETS DEPARTMENT - - - - -	99
13 OTHER SERVICES UNDER PUBLIC HEALTH DIVISION HEADQUARTERS - - - - -	104
14 THE CHUNG CHENG HIGH SCHOOL TYPHOID EPIDEMIC - - - - -	112

<i>Chapter</i>		<i>Page</i>
PART III — HOSPITALS DIVISION AND RELATED SERVICES		
15	HOSPITALS DIVISION - - - - -	119
	Hospital Services in the Mid-Sixties - - -	119
	Organisation - - - - -	119
	Development - - - - -	120
	Development 1965 - - - - -	125
	Staff - - - - -	126
	Services - - - - -	130
	Activities, 1965 - - - - -	131
	Cytology - - - - -	132
	Hospital Services - - - - -	132
	Outpatient Services - - - - -	137
	Staff Matters - - - - -	139
	Staff Training - - - - -	139
	Expenditure and Revenue - - - - -	142
	Legislation - - - - -	145
16	OUTRAM ROAD GENERAL HOSPITAL - - - - -	146
	Development - - - - -	146
	Activity - - - - -	147
	Outpatients - - - - -	147
	Highlights of the year - - - - -	147
	Emergency Unit - - - - -	151
	Anæsthetic Unit - - - - -	157
	Laboratory Services - - - - -	157
	Physiotherapy Department - - - - -	158
	Occupational Therapy Department - - - - -	159
	Almoner's Department - - - - -	160
17	THOMSON ROAD GENERAL HOSPITAL - - - - -	162
	Staff - - - - -	162
	Medical Unit - - - - -	162
	Inpatients - - - - -	163
	Outpatients Clinics - - - - -	163
	Staff - - - - -	163
	Under Graduate Teaching - - - - -	163
	Post-Graduate Teaching - - - - -	163

PART III — HOSPITALS DIVISION AND RELATED SERVICES
— *continued.*

Special Studies	-	-	-	-	-	164
Publications	-	-	-	-	-	164
Surgical Unit	-	-	-	-	-	164
Staff	-	-	-	-	-	165
Almoner's Department	-	-	-	-	-	165
Physiotherapy Department	-	-	-	-	-	166
Occupational Therapy Department	-	-	-	-	-	166
Attendances	-	-	-	-	-	166
Clinical Laboratory	-	-	-	-	-	166
18 KANDANG KERBAU HOSPITAL	-	-	-	-	-	167
Clinical Administration	-	-	-	-	-	167
The Pædiatric Unit	-	-	-	-	-	167
Hospital Staff	-	-	-	-	-	168
Inpatients	-	-	-	-	-	168
Maternity	-	-	-	-	-	168
Cynæcological	-	-	-	-	-	168
Outpatients	-	-	-	-	-	169
Post-natal Clinic	-	-	-	-	-	169
The Domiciliary Delivery Service	-	-	-	-	-	169
The Domiciliary After Care Service	-	-	-	-	-	171
Almoner's Department	-	-	-	-	-	171
Physiotherapy Unit	-	-	-	-	-	172
Clinical Laboratory	-	-	-	-	-	173
Blood Transfusion Laboratory	-	-	-	-	-	173
Ambulance Service	-	-	-	-	-	173
Cytological Service	-	-	-	-	-	173
Committees	-	-	-	-	-	173
Research	-	-	-	-	-	173
19 MIDDLETON HOSPITAL (Infectious Diseases)	-	-	-	-	-	174
Dangerous Infectious Diseases	-	-	-	-	-	177
Diphtheria	-	-	-	-	-	177
Diphtheria Carriers	-	-	-	-	-	179
Acute Anterior Polymyelitis	-	-	-	-	-	179
Typhoid Fever	-	-	-	-	-	180
Typhoid Carrier Examinations	-	-	-	-	-	182

Chapter

Page

PART III — HOSPITALS DIVISION AND RELATED SERVICES
— *continued.*

	Chickenpox	-	-	-	-	-	182
	Dysentery	-	-	-	-	-	182
	Amœbic Dysentery	-	-	-	-	-	183
	Amœbic Dysentery Carriers	-	-	-	-	-	183
20	SOCIAL HYGIENE	-	-	-	-	-	184
	Teaching	-	-	-	-	-	184
	Staff	-	-	-	-	-	184
	Attendances	-	-	-	-	-	184
	Venereal Diseases	-	-	-	-	-	185
	Types of Syphilitic Infections	-	-	-	-	-	185
	Gonorrhœa and Non-specific Urethritis	-	-	-	-	-	186
	Social Hygiene Mobile Units	-	-	-	-	-	186
	Epidemiological Control Unit	-	-	-	-	-	187
	Social Welfare Department Cases	-	-	-	-	-	187
	Prophylactic Treatment	-	-	-	-	-	187
	Skin Clinic	-	-	-	-	-	187
	Almoner's Department	-	-	-	-	-	188
	Seamen	-	-	-	-	-	188
21	TAN TOCK SENG HOSPITAL	-	-	-	-	-	189
	Staff	-	-	-	-	-	189
	Hospital Activities	-	-	-	-	-	189
	Research and Spinal Studies	-	-	-	-	-	190
	Development	-	-	-	-	-	190
	Treatment	-	-	-	-	-	190
	Rotary Tuberculosis Clinic	-	-	-	-	-	192
	Physiotherapy Department	-	-	-	-	-	193
	Occupational Therapy Department	-	-	-	-	-	193
	Diversional Therapy Unit	-	-	-	-	-	193
	Almoner's Department	-	-	-	-	-	194
	Red Cross Library	-	-	-	-	-	194
22	TRAFALGAR HOME (Leprosy)	-	-	-	-	-	195
	Staff	-	-	-	-	-	195
	Anti Leprosy Campaign	-	-	-	-	-	195
	Operating Theatre	-	-	-	-	-	198
	Occupational Therapy Department	-	-	-	-	-	198
	Physiotherapy Department	-	-	-	-	-	198
	Dental Clinic	-	-	-	-	-	198
	Almoner's Department	-	-	-	-	-	198

<i>Chapter</i>		<i>Page</i>
	PART III — HOSPITALS DIVISION AND RELATED SERVICES — <i>continued.</i>	
23	WOODBIDGE HOSPITAL - - - - -	200
	Staff - - - - -	200
	Patients - - - - -	200
	New Buildings - - - - -	203
	Training Programme - - - - -	203
24	ST. ANDREW'S ORTHOPÆDIC HOSPITAL - - -	204
25	OUTPATIENTS SERVICES - - - - -	205
	Staff - - - - -	205
	Administrative Headquarters - - - - -	209
	Development - - - - -	209
	Proposed new Pasir Panjang Outpatient Dispensary -	210
	Attendances - - - - -	210
	Outpatient Dispensaries - - - - -	210
	Island Clinics and Travelling Dispensaries - -	211
	Pulau Tekong Clinic - - - - -	211
	Pulau Brani Clinic - - - - -	211
	Travelling Dispensary Centres - - - - -	216
	Travelling Dispensaries - - - - -	216
	Laboratory Services at Outpatient Dispensaries -	216
	Staff Clinics - - - - -	218
	Staff Dispensaries - - - - -	218
	Police Hospital Clinic - - - - -	219
	Police Family Clinic - - - - -	219
	Changi Convict Prison - - - - -	219
	Reformatory Training Centre at Ulu Bedok - -	219
	Local Prison Hospital - - - - -	220
	Opium Treatment Centre - - - - -	220
	District Nursing Service - - - - -	220
	Revenue - - - - -	221
	Drugs and Chemicals - - - - -	221

<i>Chapter</i>		<i>Page</i>
	PART III — HOSPITALS DIVISION AND RELATED SERVICES — <i>continued.</i>	
26	DEPARTMENT OF RADIOLOGY - - - - -	222
	Diagnostic Staff - - - - -	222
	School of Radiography - - - - -	223
	Cardiovascular Laboratory - - - - -	224
	X-Ray Equipment, General Hospital - - - - -	224
	Casualty 'E' Unit, X-Ray Department, General Hospital - - - - -	224
	T.B. Control Unit - - - - -	224
	X-Ray Department, Thomson Road General Hospital	225
	New X-Ray Department, Tan Tock Seng Hospital -	225
	W.H.O. Seminar in Public Health Programmes in Radiation Protection - - - - -	225
	Therapeutic - - - - -	225
	New Radiotherapy Centre - - - - -	228
	Publications - - - - -	228
	Investigations - - - - -	228
27	BLOOD TRANSFUSION SERVICE - - - - -	229
	General - - - - -	229
	Staff - - - - -	229
	Donors and Donations Received - - - - -	229
	Recipients and Transfusion Given - - - - -	230
	Ethnic Distribution of Donations Received and Transfusion Given - - - - -	230
	Laboratory Service - - - - -	231
	Hæmatology Outpatient Clinics - - - - -	231
	Blood Collection and Administration Equipment -	231
	Blood Fractions - - - - -	232
	Research Projects - - - - -	232
	Publicity - - - - -	232
	Ambulances Services - - - - -	233
	Ancillary Services - - - - -	233

<i>Chapter</i>		<i>Page</i>
	PART III — HOSPITALS DIVISION AND RELATED SERVICES — <i>continued.</i>	
28	DENTAL HEALTH BRANCH - - - - -	234
	Schools Division - - - - -	234
	Hospitals Division - - - - -	235
	Maternal and Child Health Division - - - - -	236
	Miscellaneous Dental Services - - - - -	236
	Preventive Dentistry - - - - -	236
	Training of Staff - - - - -	237
	Dental Board - - - - -	238
	Dental Clinic, General Hospital - - - - -	245
29	TUBERCULOSIS CONTROL UNIT - - - - -	249
	Staff - - - - -	249
	Administration - - - - -	250
	General - - - - -	250
	Legislation - - - - -	251
	Central Tuberculosis Registry - - - - -	251
	Central Tuberculosis Laboratory - - - - -	252
	Research - - - - -	252
	Cultures - - - - -	252
	Drug Sensitivity Tests - - - - -	253
	Unclassified Myco-Bacteria - - - - -	254
	Training - - - - -	254
	Mass X-ray Case-finding - - - - -	254
	Static X-Ray Centre - - - - -	256
	Diagnostic Clinic - - - - -	256
	Tuberculin Testing and B.C.G. Vaccination - - - - -	256
	Contact Investigation - - - - -	257
	Home Visiting Section - - - - -	257
	School Tuberculosis Service - - - - -	258
30	PHARMACEUTICAL SERVICE - - - - -	271
	Stores Section - - - - -	272
	Manufacture of Pharmaceuticals - - - - -	274

PART III — HOSPITALS DIVISION AND RELATED SERVICES
— *continued.*

31	LABORATORY SERVICES	-	-	-	-	-	276
	Department of Pathology	-	-	-	-	-	276
	Biochemistry Section	-	-	-	-	-	276
	Research and Development	-	-	-	-	-	276
	Staff	-	-	-	-	-	277
	Quality Control	-	-	-	-	-	277
	Fees	-	-	-	-	-	277
	Histology Section	-	-	-	-	-	277
	Staff	-	-	-	-	-	277
	Development	-	-	-	-	-	278
	Bacteriology Section	-	-	-	-	-	278
	Staff	-	-	-	-	-	278
	Mosquito Antigens	-	-	-	-	-	278
	Antibodies against <i>Entamoeba Histolytica</i>	-	-	-	-	-	279
	Typhoid outbreak	-	-	-	-	-	279
	Minor Development	-	-	-	-	-	279
32	SINGAPORE HOSPITAL RESERVE	-	-	-	-	-	311

PART IV — DEPARTMENT OF CHEMISTRY

33	DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS AND HAZARDOUS MATERIALS	-	-	-	-	-	315
	Administration	-	-	-	-	-	315
	Forensic Section	-	-	-	-	-	317
	Health Section	-	-	-	-	-	327
	Water and Sewage Section	-	-	-	-	-	329
	Miscellaneous Section	-	-	-	-	-	333
	Revenue Section	-	-	-	-	-	338
	Toxicology Section	-	-	-	-	-	338
	Dangerous and Hazardous Materials Section	-	-	-	-	-	343

INTRODUCTION

The Honourable Mr. Yong Nyuk Lin,
Minister for Health,
Singapore.

Sir,

I have the honour to submit the Annual Report of the Ministry of Health for the year ended 31st December, 1965.

2. The crude birth rate witnessed a fall from 32.0 for 1964 to 29.9 for 1965. The crude death rate showed a slight decrease from 5.7 for 1963 and 1964 to 5.5 for 1965.

3. During the year several significant steps were taken to improve the health services in Singapore.

4. On the side of the curative services, the most important was the planning of the development of the Institute of Medical Specialities, the foundation stone of which was laid on 27th November, 1965. The Institute, planned to be built in the General Hospital site at Outram Road, when completed will provide specialised facilities for medical care and surgical operation theatres, specialised units for radiotherapy, radio-active isotope for cancer treatment, cardiac and open heart surgery, neuro-surgery and neuro-surgical unit, kidney unit, etc.

5. Other important developments of the curative services included:

- (a) the further decentralization of Outpatient Services with the closure of the Outpatient Services in the Outram Road General Hospital and the Kandang Kerbau Hospital. In place of the Outpatient Dispensary at the General Hospital, an Emergency/Admission Room was established;
- (b) the opening of the Third Medical Unit at the General Hospital, thereby adding another 146 beds to the Hospital;
- (c) the completion of the Building for the Thoracic Surgical Unit at Tan Tock Seng Hospital; some of the equipment has yet to be installed for surgical work to begin;
- (d) the extension of the Thomson Road Hospital with the completion of a block of surgical theatres, X-ray department outpatient and casualty units, thereby completing the conversion of Thomson Road Hospital originally built as a chronic sick hospital into another General Hospital;
- (e) the opening of the School for Training Assistant Nurses at Thomson Road General Hospital.

In the field of preventive services, significant events during the year included:

- (a) the publication of the White Paper on Family Planning in September 1965 by the Minister for Health wherein a 5-year Plan on Family Planning was enunciated by Government with the objective of reducing the birth rate of Singapore from its present rate of 30 per thousand by one half;
- (b) the survey made during the year by Professor M. J. Colbourne of the University of Singapore on the anti-malarial/anti-mosquito services in Singapore, the report of which was published in July 1965.
- (c) the introduction of the Hawkers' Code for the control of hawkers in the Republic and plans to have all hawkers licensed in 1966.

I have the honour to be

Sir,

Your obedient servant,

DR. NG SEE YOOK,

Acting Permanent Secretary (Health)/

Director of Medical Services.

8th August, 1966.

PART I
GENERAL

Chapter One

LEGISLATION

DURING the year the only legislation enacted was:

The Medical (Therapy, Education and Research) Act (No. 31 of 1965)

The Act came into operation on 7th January, 1966. It provides for the use of parts of bodies of deceased persons for the purpose of treatment (e.g. Cornea grafting), medical education (e.g. dissection of bodies for anatomy instruction), research (e.g. histological examination of tissues) and for post mortem examination of bodies.

The Act also provides that the removal of a part of a body or its examination after death can be made at the request of the deceased person before death or by a person who has lawful possession of the body after death on condition that the request was not withdrawn by the deceased before death and that there is no objection by any surviving relative for such procedure to be undertaken.

SUBSIDIARY LEGISLATION

The Registration of Dentists' (Amendment) Regulations, 1965

These Regulations extended the payment of fees for attendance at Board meetings to the member of the Dental Board appointed under section 2 (k) of the Registration of Dentists' Ordinance.

The Nurses Registration (Amendment) Regulations, 1965

These Regulations gave effect to the recommendation of the Nursing Board for the introduction of the following additional registers for:

- (a) Pædiatric Nursing;
- (b) Operating Theatre Nursing;
- (c) Ward Administration.

The Dangerous Drugs (Amendment) Regulations, 1965

These Regulations amended the Dangerous Drugs Regulations, 1951, to allow certain Diphenoxylate preparations to be exempted from control in keeping with the recommendations of the World Health Organization already adopted by other countries.

The Poisons (List of Substances) Notification, 1965

The Notification listed the new chemicals with toxic properties on the market and reclassified some existing poisons in accordance with their group chemical names.

Chapter Two

STAFF AND TRAINING

MEDICAL OFFICERS

THE approved establishment for the year comprised 62 specialist medical posts, 73 posts of senior registrar, 324 posts of medical officer and 55 posts of houseman — a total of 514 posts.

During the year 41 medical officers resigned against 79 recruited. 16 medical officers proceeded overseas on study awards. 21 medical officers returned after successfully completing their courses of study.

At the end of the year 66 posts remained unfilled.

A study course at the University of Singapore to prepare candidates to sit for the primary F.R.A.C.S. Examination was conducted during the year with the assistance of experts provided by the Government of Australia under the Colombo Plan. Candidates for this course came from Singapore, Malaysia, and the surrounding countries. Only one serving officer was successful in this examination.

DENTAL OFFICERS

The approved establishment of dental officers for the year was 60, comprising the Assistant Director of Medical Services (Dental) the head of the Dental Branch, four specialist posts, three senior registrars, one inspecting officer and 51 dental officers and housemen.

Four dental officers and three housemen resigned and one dental officer had his services terminated during the year. Against this two dental officers and seven housemen were recruited.

Two dental officers went on fellowship overseas and two returned to duty after completing their training overseas. One dental officer went on study leave without pay.

NURSING STAFF

Of the approved establishment of 3,997 posts of nursing staff for the year, 3,628 were filled leaving a balance of 369 posts (or 9.2 per cent) unfilled as on 31st December, 1965.

During the year, 2,074 nursing personnel undertook training in various courses provided in Singapore. Courses were provided at basic and post-basic levels. Basic courses for nursing personnel provided during the year were as follows:

(i) *General Nursing*.—At the end of the year there were 704 students in training for General Nursing conducted at the Outram Road General Hospital. Of these 239 students were in the 1st year of training, 191 in the 2nd year and 274 in the 3rd year.

221 trainees qualified in General Nursing during the year. They were made up of 199 female and 22 male nurses.

(ii) *Psychiatric Nursing*.—At the end of the year there were 102 students in training in Psychiatric Nursing conducted at Woodbridge Hospital. Of these 34 students were in the 1st year, 35 students in the 2nd year and 33 students in the 3rd year.

14 trainees qualified in Psychiatric Nursing during the year, comprising of four female and ten male nurses.

(iii) *Midwifery*.—At the end of the year there were 244 pupils in training in Midwifery conducted at the Kandang Kerbau Hospital. They were made up of 174 Pupil Midwives, and 70 Nurses with General Nursing Certificate but taking Midwifery as an additional qualification.

123 trainees qualified in Midwifery during the year.

(iv) *Assistant Nursing*.—At the end of the year there were 237 Pupil Assistant Nurses in training conducted at the Thomson Road General Hospital. Of these pupils, 145 were in the 1st year and 92 in the 2nd year.

143 trainees qualified in Assistant Nursing during the year.

(v) *Assistant Psychiatric Nursing*.—At the end of the year there were 67 Pupil Assistant Psychiatric Nurses in training conducted at the Woodbridge Hospital. Of these pupils, 25 were in the 1st year, and 42 in the 2nd year.

24 trainees qualified during the year. These were made up of 19 female and five male Assistant Psychiatric Nurses.

Post-basic courses conducted during the year were as follows:

(i) *Pædiatric Training*.—At the end of the year there were ten candidates under-going the course in Pædiatric Training conducted at the Outram Road General Hospital. This is the 4th course on Pædiatric Training which commenced on 4th May, 1965.

Ten candidates were successful in the 3rd course which ended on 31st March, 1965.

(ii) *Operation Theatre Course*.—Two courses in Operation Theatre work were conducted at the Outram Road General Hospital during the year. In each course, there were six candidates. During the year there were 12 successful candidates, six of whom completed their training on 14th May, 1965, and the other six candidates completed their training on 29th November, 1965.

(iii) *Ward Administration Course*.—At the end of the year there were 11 candidates under-going training for the Ward Administration Course conducted at the Outram Road General Hospital. The Ward Administration Course is a one year course.

(iv) *Thoracic Nursing Training*.—At the end of the year there were ten trainees in Thoracic Nursing Course conducted at the Tan Tock Seng Hospital.

During the year ten nurses completed the course, eight in May 1965, and two in November 1965.

(v) *Public Health Nursing Course*.—At the end of the year there were 16 trainees under-going the Public Health Nursing Course conducted at the Institute of Health.

During the year 13 nurses successfully completed the course in Public Health Nursing.

Chapter Three

THE MEDICAL REGISTER

THE MEDICAL REGISTER (31ST DECEMBER, 1965)

REGISTERED

	<i>Doctors</i>	<i>Dentists</i>	<i>Female Nurses</i>	<i>Male Nurses</i>	<i>Asst. Nurses</i>	<i>Mid- wives</i>	<i>Phar- macists</i>
	(a)	(b)	(c)	(c)	(c)	(d)	(e)
Government Medical De- partments	395	59	1,065	288	756	928	32
University (Teaching Staff)	55	16	—	—	—	—	5
Private Practice and Private Institutions	469	267*	648	36	14	537	89
Housemen	69	—	—	—	—	—	—
Total ..	988	342	1,713	324	770	1,465	126

* Division I Dentists. 50
 Division II Dentists. 217

- (a) The Medical Registration Ordinance (Chapter 191).
 (b) The Registration of Dentists Ordinance (Chapter 197).
 (c) The Nurses Registration Ordinance (Chapter 194).
 (d) The Midwives Ordinance (Chapter 192).
 (e) The Registration of Pharmacists Ordinance (Chapter 198).

Chapter Four

FINANCE

THE 1965 estimated expenditure for the Ministry of Health was \$71.4 million, made up as follows:

				\$
Ministry of Health	..	..	..	4,242,310
Hospitals Division	..	..	..	37,905,720
Public Health Division	..	..	..	25,174,200
Chemistry	..	..	..	524,220
Capital and Development Expenditure			..	3,565,380
			Total ..	<u>71,411,830</u>

It amounted to an increase of approximately 3.7 per cent over the 1964 estimated expenditure of \$68.9 million.

Actual total expenditure for the year amounted to \$68,578,437. As receipts accounted for \$7,255,248, there was a balance of \$61,323,188 borne by Public Revenue. Details of Receipts and Expenditure are shown in the Financial Statement in Table 1.

TABLE 1

FINANCIAL STATEMENT FOR THE YEAR 1965

Receipts		Payments	
	\$ c.	\$ c.	\$ c.
Transfer Receipts:			
Contribution and Fines under W. & O. Pension Ordinance and Miscellaneous Receipts, etc.	9,420 15		
Professional and Practicing Registration—Medical Dental, Pharmacist, Nurses and Midwife	15,870 00	3,343,728 37	
Disposal of Goods, Services:			
Rent—Government Buildings, Quarters	\$ 69,233 25	27,125,250 92	
Market Stall	807,301 08	6,620,551 66	
Chemistry—Analysis fees for work done for P.U.B.	876,534 33	431,801 04	
Pathology—Laboratory Fees for work done for Statutory Bodies	83,986 00		37,521,331 99
67,459 00			
Other Sales and Non-Regulatory Charges:			
Public Health—Commission on Fish Sales, Trade Refuse Removal Fees and Nightsoil Removal Fees, etc.	2,064,443 30		
Hospital—Hospital Charges, Sales of swills, Outpatient Charges, etc.	2,443,743 16		
Miscellaneous Receipt	21,242 66	580,633 65	
Notes of Evidence, Documents, Search Fees	11,121 00	10,239,908 82	
Sales of Stores	31,992 30		
Regulatory Charges to Enterprises:			
Chemistry Department Fees	101,466 00	16,793,898 87	
Licences—Public Health Division	1,143,168 44	49,253 11	
Miscellaneous	4,018 00		27,663,694 45
Regulatory Charges to Household:			
Public Health—Anti-Mosquitoes Oiling Charges, Interment, Crematoria	87,835 82		
Reimbursement by other Governments and Statutory Bodies:			
Australian Government for treatments of Patients of Christmas Island	6,250 00	92,952 62	
P.U.B. for Medical Facilities for its Staff	55,000 00	572,580 58	
Other Reimbursement and Recoveries:			
Electricity and Water Charges	148,877 25	814,746 86	
Miscellaneous	7,790 30	1,519 46	
Overpayments and Refunds:			1,481,799 52
Government's Contributions to C.P.F.	37,681 97		
Overpayments, Refund of	6,708 77		
Rebate on Charges for Water supplied to St. John's Island	30,640 46		
Balance borne by Public Revenue	61,323,188 49		1,911,611 44
	68,578,437 40		68,578,437 40

Chapter Five

VITAL STATISTICS

THE Vital Statistics relating to population, its main racial components, birth and deaths and migration by sea and air during 1965 are set out in Tables 2 to 18.

TABLE 2
POPULATION OF SINGAPORE, 1911 TO 1965

Year	Total	Malays	Chinese	Indians and Pakis- tanis	Eura- sians	Euro- peans	Others
1911 (Census) ..	303,321	41,806	219,577	27,755	4,671	5,711	3,801
1921 (Census) ..	418,358	53,595	315,151	32,314	5,436	6,145	5,717
1931 (Census) ..	557,745	65,014	418,640	50,811	6,903	8,082	8,295
1947 (Census) ..	938,144	113,803	729,473	68,967	9,110	9,279	7,512
1957 (Census) ..	1,445,929	197,059	1,090,596	124,084	11,382	10,826	11,982
1958 (Mid-Year) ..	1,514,000	207,300	1,141,800	129,500	11,700	11,400	12,300
1959 (Mid-Year) ..	1,579,600	217,400	1,190,000	134,600	12,000	12,200	13,400
1960 (Mid-Year) ..	1,634,100	227,300	1,230,700	137,800	12,200	12,700	13,400
1961 (Mid-Year) ..	1,687,300	236,400	1,269,100	141,500	12,800	13,400	14,100
1962 (Mid-Year) ..	1,732,800	243,400	1,302,500	143,700	13,700	14,300	15,200
1963 (Mid-Year) ..	1,775,200	249,200	1,334,500	146,100	14,400	15,000	16,000
1964 (Mid-Year) ..	1,820,000	257,800	1,366,500	149,900	14,400	15,100	16,300
1965 (Mid-Year) ..	1,864,900	266,600	1,396,500	153,700	15,100	15,800	17,200

The racial group 'Malays' includes Indonesians.

TABLE 3

POPULATION ESTIMATES OF SINGAPORE BY RACIAL GROUP AND SEX, 1965

Period		Total	Malays	Chinese	Indians and Pakis- tanis	Eura- sians	Euro- peans	Others
		(In Thousands)						
30th June, 1965								
Males	..	967.5	136.8	705.9	98.1	8.1	8.9	9.7
Females	..	897.4	129.8	690.6	55.6	7.0	6.9	7.5
Total	..	1,864.9	266.6	1,396.5	153.7	15.1	15.8	17.2
31st December, 1965								
Males	..	979.8	139.1	714.0	98.5	8.6	9.4	10.2
Females	..	910.7	132.2	699.2	56.7	7.4	7.2	8.0
Total	..	1,890.5	271.3	1,413.2	155.2	16.0	16.6	18.2

Notes: (i) The racial group 'Malays' includes Indonesians.
(ii) The population estimates *exclude* non-locally domiciled Services personnel (including United Kingdom based civilians employed by the Services) and their families

TABLE 4
LIVE-BIRTHS WHICH OCCURRED IN 1965
BY RACIAL GROUP AND AGE OF MOTHER AND BY SEX OF CHILD

Mother's Age (Years)	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURASIANS		EUROPEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
12	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..
13	3	1	2	..	..	..	2	1	..	..	..	..	..	..	..
14	19	8	11	2	1	5	5	1	5	..	..	..	..	..	..
15	57	27	30	9	11	8	13	9	6	1	..	..	..	..	..
16	223	103	120	45	56	37	45	18	16	1	..	1	..	1	3
17	540	260	280	99	102	111	127	48	45	..	1	..	1	2	4
18	1,217	616	601	222	209	294	287	84	96	4	1	..	1	12	7
19	1,425	731	694	215	200	413	385	95	101	3	2	1	..	4	6
20	1,793	959	834	281	246	567	474	103	110	3	2	1	..	4	2
21	2,322	1,195	1,127	299	290	772	704	111	122	2	3	5	1	6	7
22	2,648	1,375	1,273	296	273	950	867	115	123	4	2	3	1	7	7
23	2,933	1,536	1,397	284	284	1,109	980	126	108	8	7	1	9	8	9
24	3,811	1,954	1,857	350	341	1,422	1,362	146	121	11	4	6	16	19	13
25	4,353	2,190	2,163	412	391	1,566	1,578	184	161	9	15	8	7	11	11
26	3,873	1,976	1,897	314	343	1,524	1,403	110	129	11	9	8	4	9	9
27	3,648	1,900	1,748	320	310	1,415	1,303	130	101	10	8	12	8	13	18
28	3,015	1,563	1,452	331	306	1,098	1,009	113	107	5	11	5	5	11	14
29	2,770	1,417	1,353	269	243	1,019	1,015	105	75	9	1	7	10	8	9
30	3,342	1,722	1,620	374	339	1,228	1,159	100	97	4	9	6	7	10	9
31	2,497	1,271	1,226	210	224	972	900	72	81	3	7	8	6	6	8
32	2,367	1,177	1,190	237	230	843	878	84	69	6	3	2	..	5	10
33	2,018	1,008	1,010	156	178	773	753	56	64	10	3	5	5	8	7
34	1,803	898	905	155	179	674	655	46	58	13	4	5	5	5	4
35	1,895	1,001	894	238	196	692	633	57	51	1	7	6	3	7	4
36	1,460	779	681	137	115	590	517	39	33	7	6	1	4	5	6
37	1,310	668	642	121	125	516	476	26	27	3	4	..	5	2	5
38	1,168	601	567	123	121	445	414	22	25	3	4	4	1	4	2
39	*805	415	389	64	59	334	309	10	16	3	3	1	..	3	2
40	*706	343	362	54	63	277	279	9	17	1	..	2	2	..	1
41	470	225	245	28	20	192	214	4	6	1	3	..	2	..	..
42	444	216	228	28	44	177	175	10	6	..	2	1	..	..	1
43	293	142	151	26	15	113	131	2	2	..	3	..	..	1	..
44	190	100	90	8	10	89	76	3	4	..	..	..	..	..	..
45	137	66	71	10	12	55	54	1	3	..	2	..	..	..	..
Over 45	148	76	72	16	6	57	62	3	4	..	..	..	..	..	..
Unknown	21	13	8	3	2	7	4	..	1	1	..	..	..	2	1
Total	† 55,725	28,532	27,191	5,736	5,544	20,344	19,249	2,043	1,990	137	126	99	103	173	179

* Includes one unknown sex (Chinese)
† Includes two unknown sex (Chinese)
The racial group 'Malays' includes Indonesians.
Figures exclude 2,213 live-births of wives of non-locally domiciled military and civilian Services personnel.

TABLE 5
LIVE-BIRTHS WHICH OCCURRED IN 1965
BY RACIAL GROUP OF FATHER, REGISTRATION AREA AND SEX OF CHILD

Racial Group of Father	SINGAPORE TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
Malays	11,008	5,561	5,447	7,920	4,005	3,915	3,088	1,556	1,532
Chinese	*39,339	20,212	19,125	*35,646	18,331	17,313	3,693	1,881	1,812
Indians and Pakistanis	4,405	2,252	2,153	4,056	2,071	1,985	349	181	168
Eurasians	298	161	137	284	156	128	14	5	9
Europeans	206	99	107	204	99	105	2	—	2
Others	469	247	222	438	228	210	31	19	12
Total	*55,725	28,532	27,191	*48,548	24,890	23,656	7,177	3,642	3,535

* Includes two unknown sex
The racial group 'Malays' includes 'Indonesians'
Figures exclude 2,213 live-births of wives of non-locally domiciled military and civilians Services personnel.

TABLE 6

LIVE-BIRTHS WHICH OCCURRED IN 1965

BY PLACE OF USUAL RESIDENCE OF PARENTS, RACIAL GROUP OF FATHER AND SEX OF CHILD

Place of usual Residence	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURA-SIANS		EURO-PEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
	*														
City ..	32,097	16,511	15,584	2,736	2,630	12,126	11,361	1,330	1,298	88	68	72	77	159	150
Katong ..	8,926	4,593	4,333	1,667	1,623	2,493	2,354	335	285	47	34	7	3	44	34
Serangoon	8,395	4,280	4,115	450	424	3,381	3,234	392	394	18	27	8	12	31	24
Bukit Panjang	3,029	1,483	1,546	269	334	1,047	1,063	156	134	5	4	3	4	3	7
Jurong ..	2,731	1,379	1,352	234	257	1,108	1,062	31	28	..	..	1	1	5	4
Southern Islands ..	451	239	212	196	173	38	32	3	4	1	2	..	1	1	..
States of Malaya ..	87	42	45	9	6	18	16	5	10	2	2	4	8	4	3
Overseas ..	9	5	4	..	..	1	3	..	..	..	..	4	1	..	..
	*														
Total ..	55,725	28,532	27,191	5,561	5,447	20,212	19,125	2,252	2,153	161	137	99	107	247	222

* Includes two unknown sex (Chinese)
The racial group 'Malays' includes 'Indonesians'
Figures exclude 2,213 live-births of wives of non-locally domiciled military and civilian Services personnel.

TABLE 7

LIVE-BIRTHS WHICH OCCURRED IN 1965

BY PLACE OF USUAL RESIDENCE OF PARENTS, REGISTRATION AREA AND SEX OF CHILD

Place of usual Residence	SINGAPORE TOTAL			REGISTRATION AREA					
				CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
City ..	*32,097	16,511	15,584	*31,871	16,395	15,474	226	116	110
Katong ..	8,926	4,593	4,333	6,415	3,312	3,103	2,511	1,281	1,230
Serangoon	8,395	4,280	4,115	5,945	3,011	2,934	2,450	1,269	1,181
Bukit Panjang	3,029	1,483	1,546	2,087	1,042	1,045	942	441	501
Jurong ..	2,731	1,379	1,352	2,011	1,018	993	720	361	359
Southern Islands	451	239	212	127	68	59	324	171	153
States of Malaya	87	42	45	83	39	44	4	3	1
Overseas ..	9	5	4	9	5	4	..	..	..
Total ..	*55,725	28,532	27,191	*48,548	24,890	23,656	7,177	3,642	3,535

*Includes 2 unknown sex.
Figures exclude 2,213 live-births of wives of non-locally domiciled military and civilian Services personnel.

TABLE 8
DEATHS REGISTERED IN 1965

BY RACIAL GROUP, REGISTRATION AREA AND SEX

Racial Groups	SINGAPORE TOTAL			CITY AREA			RURAL AREA		
	M. and F.	Male	Female	M. and F.	Male	Female	M. and F.	Male	Female
Malays	*1,584	865	718	*1,040	589	450	544	276	268
Chinese	*7,707	4,500	3,205	*6,405	3,779	2,624	1,302	721	581
Indians and Pakistanis	769	596	173	679	529	150	90	67	23
Eurasians	85	51	34	72	44	28	13	7	6
Europeans	37	25	12	34	23	11	3	2	1
Others	*81	56	22	*74	51	20	7	5	2
Total ..	*10,263	6,093	4,164	*8,304	5,015	3,283	1,959	1,078	881

*Includes unknown sex.

The racial group 'Malays' includes 'Indonesians.'

Figures exclude 118 deaths of non-locally domiciled military and civilian Services personnel and their families.

TABLE 9
DEATHS REGISTERED IN 1965

BY PLACE OF USUAL RESIDENCE, RACIAL GROUP AND SEX

Place of usual Residence	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURA- SIANS		EURO- PEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
City ..	*6,541	3,866	2,669	411	337	2,974	2,187	393	102	26	17	18	11	44	15
Katong ..	1,451	850	601	274	231	481	334	68	19	17	12	2	..	8	5
Serangoon	1,302	775	527	65	54	619	433	80	34	7	3	2	1	2	2
Bukit Pan- jang ..	441	275	166	45	33	191	117	39	15	..	1	..	..	..	..
Jurong ..	382	233	149	34	29	188	117	11	2	..	1	..	..	..	..
Southern Islands ..	70	37	33	28	28	9	5	..	..	..	..	..	..	..	..
States of Malaya	66	49	17	8	4	35	12	4	1	1	..	1	..	..	..
Overseas ..	10	8	2	..	2	3	..	1	..	..	..	2	..	2	..
Total ..	*10,263	6,093	4,164	865	718	4,500	3,205	596	173	51	34	25	12	56	22

*Includes 6 unknown sex (1 Malay, 2 Chinese and 3 Others).

The racial group 'Malays' includes 'Indonesians.'

Figures exclude 118 deaths of non-locally domiciled military and civilian Services personnel and their families.

TABLE 10
DEATHS REGISTERED IN 1965
BY PLACE OF USUAL RESIDENCE, REGISTRATION AREA AND SEX

Place of usual Residence	SINGAPORE TOTAL			REGISTRATION AREA					
				CITY AREA			RURAL AREA		
	M. and F.	Male	Female	M. and F.	Male	Female	M. and F.	Male	Female
City	*6,541	3,866	2,669	*6,410	3,784	2,620	131	82	49
Katong	1,451	850	601	798	514	284	653	336	317
Serangoon ..	1,302	775	527	605	399	206	697	376	321
Bukit Panjang ..	441	275	166	208	130	78	233	145	88
Jurong	382	233	149	193	121	72	189	112	77
Southern Islands ..	70	37	33	16	11	5	54	26	28
States of Malaya ..	66	49	17	64	48	16	2	1	1
Overseas	10	8	2	10	8	2	..	..	..
Total	*10,263	6,093	4,164	*8,304	5,015	3,283	1,959	1,078	881

*Includes 6 unknown sex.

Figures exclude 118 deaths of non-locally domiciled military and civilian Services personnel and their families.

TABLE 11
DEATHS REGISTERED IN 1965
BY AGE GROUP, RACIAL GROUP AND SEX

Age Group	TOTAL			MALAYS		CHINESE		INDIANS AND PAKISTANIS		EURA- SIANS		EURO- PEANS		OTHERS	
	M. and F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 day ..	* 258	148	108	30	26	106	73	10	8	1	..	..	..	1	1
1 day and under															
2 days ..	190	117	73	23	16	88	52	5	5	..	..	1	..	..	..
2 days and under															
3 days ..	122	75	47	15	12	52	29	7	5	1	..	..	..	..	1
3 days and under															
4 days ..	84	53	31	7	11	38	19	8	1	..	..	..	..	..	..
4 days and under															
5 days ..	56	27	29	7	8	16	19	3	1	..	..	..	1	1	..
5 days and under															
6 days ..	45	25	20	7	4	17	13	1	1	..	2	..	..	..	..
6 days and under															
7 days ..	29	20	9	2	2	16	7	2	..	..	..	..	..	..	..
7 days and under															
14 days ..	115	66	49	17	6	43	39	6	4	..	..	..	..	..	..
14 days and under															
21 days ..	58	36	22	15	2	17	15	4	4	..	..	..	1	..	..
21 days and under															
28 days ..	38	21	17	10	7	8	9	3	1	..	..	..	..	..	..
Neo-Natal Deaths	* 995	588	405	133	94	401	275	49	30	2	2	1	2	2	2
28 days and under															
2 months ..	110	68	42	21	17	43	23	4	2	..	..	..	..	..	..
2 months and															
under 3 months	66	43	23	10	7	26	12	5	4	..	..	1	..	1	..
3 months and															
under 4 months	55	34	21	17	11	16	9	1	1	..	..	..	..	..	..
4 months and															
under 5 months	51	31	20	11	7	15	11	3	1	..	..	..	..	2	1
5 months and															
under 6 months	36	23	13	9	7	12	6	1	..	..	..	..	..	1	..
6 months and															
under 7 months	† 29	15	13	5	5	9	6	1	1	..	..	..	..	..	1
7 months and															
under 8 months	33	18	15	9	7	9	5	..	2	..	1	..	..	..	..
8 months and															
under 9 months	25	12	13	6	8	6	5	..	..	..	..	..	..	..	..
9 months and															
under 10 months	30	19	11	12	4	5	7	2	..	..	..	..	..	..	..
10 months and															
under 11 months	22	9	13	2	4	7	9	..	..	..	..	..	..	..	..
11 months and															
under 1 year ..	12	9	3	3	2	5	..	1	1	..	..	..	..	..	..
Infant Mortality	‡ 1,464	869	592	238	173	554	368	67	42	2	3	2	2	6	4
1 year and under															
2 years ..	184	84	100	32	38	43	52	4	8	4	1	1	..	..	1
2 years and															
under 3 years	128	68	60	23	26	40	30	5	3	..	1	..	..	..	..
3 years and															
under 4 years	86	49	37	15	7	29	28	4	2	1	..	..	..	..	..
4 years and															
under 5 years	64	39	25	15	7	22	16	2	2	..	..	..	..	..	..
5—9 years ..	186	102	84	24	21	66	52	8	10	1	..	..	1	3	..
10—14 years ..	145	83	62	15	10	64	51	3	1	..	..	1	..	..	..
15—19 years ..	147	96	51	18	14	75	28	2	8	..	1	1	..	..	..
20—24 years ..	157	106	51	19	12	75	34	12	5	..	..	..	..	..	..
25—29 years ..	166	105	61	20	14	69	41	15	6	..	..	1	..	..	..
30—34 years ..	189	113	76	12	17	80	56	16	3	2	..	..	..	3	..
35—39 years ..	274	168	106	26	20	98	78	39	7	1	..	2	..	2	1
40—44 years ..	325	204	121	27	32	129	78	38	8	2	2	2	..	6	1
45—49 years ..	474	310	164	34	25	213	127	60	9	1	2	1	..	1	1
50—54 years ..	710	475	235	40	48	345	174	84	9	2	3	2	..	2	1
55—59 years ..	999	677	322	64	55	525	248	74	15	8	3	1	..	5	1
60—64 years ..	1,072	752	320	75	63	606	239	56	12	6	5	2	1	7	..
65—69 years ..	1,046	651	395	73	48	523	336	42	4	7	2	3	1	3	4
70—74 years ..	918	522	396	31	30	449	352	26	10	6	2	3	..	7	2
75—79 years ..	724	323	401	28	29	273	360	14	6	4	3	..	2	4	1
80—84 years ..	462	188	274	15	14	148	250	19	3	2	4	1	2	3	1
85 years and over	310	85	225	16	14	60	205	4	..	2	2	1	3	2	1
Unknown ..	|| 33	24	6	5	1	14	2	2	..	..	..	1	..	2	3
Total ..	10,263	6,093	4,164	865	718	4,500	3,205	596	173	51	34	25	12	56	22

* Includes 2 unknown sex (Chinese).

† Includes unknown sex

‡ Includes 1 unknown sex (Others).

|| Includes 3 unknown sex. (1 Malay and 2 Others)

The racial group 'Malays' includes Indonesians.

Figures exclude 118 deaths of non-locally domiciled military and civilian Services personnel and their families.

TABLE 12

DEATHS REGISTERED IN 1965

BY AGE GROUP, REGISTRATION AREA AND SEX

Age Group	SINGAPORE TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
Under 1 day ..	*258	148	108	*239	140	97	19	8	11
1 day and under 2 days	190	117	73	182	113	69	8	4	4
2 days and under 3 days	122	75	47	115	72	43	7	3	4
3 days and under 4 days	84	53	31	78	50	28	6	3	3
4 days and under 5 days	56	27	29	50	25	25	6	2	4
5 days and under 6 days	45	25	20	40	23	17	5	2	3
6 days and under 7 days	29	20	9	26	17	9	3	3	..
7 days and under 14 days	115	66	49	103	60	43	12	6	6
14 days and under 21 days	58	36	22	52	31	21	6	5	1
21 days and under 28 days	38	21	17	31	17	14	7	4	3
Neo-Natal Deaths ..	*995	588	405	*916	548	366	79	40	39
28 days and under									
2 months ..	110	68	42	88	51	37	22	17	5
2 months and under									
3 months ..	66	43	23	52	36	16	14	7	7
3 months and under									
4 months ..	55	34	21	41	25	16	14	9	5
4 months and under									
5 months ..	51	31	20	36	21	15	15	10	5
5 months and under									
6 months ..	36	23	13	31	20	11	5	3	2
6 months and under									
7 months ..	†29	15	13	†23	12	10	6	3	3
7 months and under									
8 months ..	33	18	15	28	16	12	5	2	3
8 months and under									
9 months ..	25	12	13	19	8	11	6	4	2
9 months and under									
10 months ..	30	19	11	22	14	8	8	5	3
10 months and under									
11 months ..	22	9	13	20	9	11	2	..	2
11 months and under									
1 year ..	12	9	3	9	6	3	3	3	..
Infant Mortality ..	‡1,464	869	592	‡1,285	766	516	179	103	76

* Includes 2 unknown sex.

† Includes 1 unknown sex.

‡ Includes 3 unknown sex.

TABLE 12 — *continued*

DEATHS REGISTERED IN 1965
BY AGE GROUP, REGISTRATION AREA AND SEX

Age Group	SINGAPORE TOTAL			CITY AREA			RURAL AREA		
	M. and F.	M.	F.	M. and F.	M.	F.	M. and F.	M.	F.
1 year and under 2 years	184	84	100	137	71	66	47	13	34
2 years and under 3 years	128	68	60	91	52	39	37	16	21
3 years and under 4 years	86	49	37	70	41	29	16	8	8
4 years and under 5 years	64	39	25	53	31	22	11	8	3
5—9 years ..	186	102	84	166	92	74	20	10	10
10—14 years ..	145	83	62	126	75	51	19	8	11
15—19 years ..	147	96	51	133	87	46	14	9	5
20—24 years ..	157	106	51	144	98	46	13	8	5
25—29 years ..	166	105	61	154	99	55	12	6	6
30—34 years ..	189	113	76	168	103	65	21	10	11
35—39 years ..	274	168	106	245	153	92	29	15	14
40—44 years ..	325	204	121	280	178	102	45	26	19
45—49 years ..	474	310	164	394	259	135	80	51	29
50—54 years ..	710	475	235	597	412	185	113	63	50
55—59 years ..	999	677	322	806	550	256	193	127	66
60—64 years ..	1,072	752	320	857	609	248	215	143	72
65—69 years ..	1,046	651	395	814	505	309	232	146	86
70—74 years ..	918	522	396	702	390	312	216	132	84
75—79 years ..	724	323	401	513	232	281	211	91	120
80—84 years ..	462	188	274	340	135	205	122	53	69
85 years and over ..	310	85	225	202	58	144	108	27	81
Unknown ..	*33	24	6	*27	19	5	6	5	1
Total ..	† 10,263	6,093	4,164	† 8,304	5,015	3,283	1,959	1,078	881

† Includes 6 unknown sex.

Figures exclude 118 deaths of non-locally domiciled military and civilian Services personnel and their families.

TABLE 13
LIVE-BIRTHS AND CRUDE BIRTH RATES: 1955 AND 1965

Racial Group					1955		1965	
					Number	Rate*	Number	Rate*
Malays	..	..	..	..	8,336	47.8	11,008	41.3
Chinese	..	..	..	..	43,069	43.6	39,339	28.2
Indians and Pakistanis	..	..	..	..	4,431	40.3	4,405	28.7
Eurasians	..	..	..	..	358	32.8	298	19.7
Europeans	..	..	..	..	1,033	27.2	206	13.0
Others	..	..	..	..	585	56.3	469	27.3
Total ..					57,812	44.3	55,725	29.9

* Number of live-births per 1,000 mid-year population.

Notes: (i) Figures for 1955 *include* live-births of wives of non-locally domiciled Services personnel (including United Kingdom-based civilians employed by the Services).

(ii) Figures for 1965 *exclude* 2,213 live-births of wives of non-locally domiciled Services personnel (including United Kingdom-based civilians employed by the Services).

(iii) The racial group 'Malays' includes 'Indonesians'.

TABLE 14
DEATHS AND CRUDE DEATH RATES: 1955 AND 1965

Racial Group					1955		1965	
					Number	Rate*	Number	Rate*
Malays	..	..	..	..	1,947	11.2	1,584	5.9
Chinese	..	..	..	..	7,648	7.7	7,707	5.5
Indians and Pakistanis	..	..	..	..	712	6.5	769	5.0
Eurasians	..	..	..	..	78	7.2	85	5.6
Europeans	..	..	..	..	86	2.3	37	2.3
Others	..	..	..	..	102	9.8	81	4.7
Total ..					10,573	8.1	10,263	5.5

* Number of deaths per 1,000 mid-year population.

Notes: (i) Figures for 1955 *include* deaths of non-locally domiciled Services personnel (including United Kingdom-based civilians employed by the Services) and members of their families.

(ii) Figures for 1965 *exclude* 118 deaths of non-locally domiciled Services personnel (including United Kingdom-based civilians employed by the Services) and members of their families.

(iii) The racial group 'Malays' includes 'Indonesians'.

TABLE 15

INFANT MORTALITY AND INFANT MORTALITY RATES: 1963—1965

Racial Group	1963		1964		1965	
	Number	Rate*	Number	Rate*	Number	Rate*
Malays	455	39.3	492	42.0	411	37.3
Chinese	1,061	25.1	1,088	26.6	924	23.5
Indians and Pakistanis ..	137	29.7	139	30.4	109	24.7
Eurasians	4	12.6	5	16.0	5	16.8
Europeans	12	39.3	6	23.6	4	19.4
Others	5	9.8	8	18.5	11	23.5
Total ..	1,674	28.1	1,738	29.9	1,464	26.3

*Number of deaths under 1 year of age per 1,000 live-births.

Note: Figures exclude 42, 32 and 50 deaths of children under 1 year of age of non-locally domiciled military and civilian Services personnel for the years 1963, 1964 and 1965 respectively.

TABLE 16

STILL-BIRTHS AND STILL-BIRTH RATES: 1961—1965

<i>Year</i>	<i>Number</i>	<i>Rate*</i>
1961	766	12.6
1962	740	12.4
1963	739	12.3
1964	694	11.8
1965	654	11.6

*Number of still-births per 1,000 total live-births and still-births.

Note: Figures exclude 27, 14, 26, 30 and 27 still-births of wives of non-locally domiciled military and civilian Services personnel for the years 1961, 1962, 1963, 1964 and 1965 respectively.

TABLE 17

MATERNAL MORTALITY AND MATERNAL MORTALITY RATES: 1961—1965

<i>Year</i>	<i>Number</i>	<i>Rate*</i>
1961	24	0.4
1962	23	0.4
1963	21	0.3
1964	24	0.4
1965	12†	0.2†

*Number of maternal deaths per 1,000 total live-births and still-births.

†Provisional.

Note: There were no maternal deaths of non-locally domiciled military and civilian Services personnel and their families for the years 1961—1965.

TABLE 18

SINGAPORE

MIGRATION STATISTICS BY SEA AND AIR DURING 1965

(a) Arrivals

Racial Group	ADULTS		*CHILDREN		Total
	Males	Females	Males	Females	
Malays	7,126	2,347	524	495	10,492
Chinese	28,478	11,583	1,092	697	41,850
Indians and Pakistanis ..	11,706	3,049	1,274	935	16,964
Eurasians	384	145	59	34	622
Europeans	58,821	30,151	3,623	2,557	95,152
Others	15,201	2,140	323	194	17,858
Total ..	121,716	49,415	6,895	4,912	182,938

(b) Departures

Racial Group	ADULTS		*CHILDREN		Total
	Males	Females	Males	Females	
Malays	7,615	2,323	526	472	10,936
Chinese	32,005	13,386	1,120	779	47,290
Indians and Pakistanis ..	23,968	4,413	2,052	1,627	32,060
Eurasians	302	114	35	25	476
Europeans	57,786	25,714	4,241	3,389	91,130
Others	15,544	3,281	398	279	19,502
Total ..	137,220	49,231	8,372	6,571	201,394

* Under 12 years of age.

The racial group 'Malays' includes 'Indonesians'.

PART II
PUBLIC HEALTH DIVISION

Chapter Six

INTRODUCTION

THE Republic of Singapore comprises the main island of Singapore together with several small surrounding islands. The main island is 27 miles by 14 miles in dimension with an area of 216 square miles. The area of all the small islands totals about 10 square miles.

The integration of the former City Council Health Services and the Rural Board Health Department was completed at the end of 1961 with the formation of the Public Health Division under the Deputy Director of Medical Services (Health). With the exception of certain difficulties as a result of rapid urban growth, physical development and industrialisation which are referred to later, the public health services have been maintained at a satisfactory level. Dr. K. Kanagaratnam, M.B., B.S., D.P.H., F.R.S.H., was the Head of the Division as Deputy Director of Medical Services (Health).

The Public Health Division is responsible for preventive health services and comprises the following Branches/sections:

- (1) Environmental Health Branch.
- (2) Quarantine and Epidemiology Branch.
- (3) School Health Services.
- (4) Maternal and Child Health Services.
- (5) Training and Health Education Branch.
- (6) Hawkers and Markets Department.
- (7) Other Services under Public Health Headquarters Administration.

An organisation chart appears on page 40.

MAJOR EVENTS OF PUBLIC HEALTH SIGNIFICANCE IN 1965

- (1) Family Planning.
- (2) Survey of Anti-Mosquito Organisation.
- (3) Typhoid Outbreak in Chung Cheng High School, 1965.
- (4) Control of Cattle.
- (5) Tetra ethyl lead poisoning in West Coast Road.
- (6) Problems of urbanisation, physical development and industrialisation.

(1) *Family Planning*

In March 1965, a Review Committee was appointed by the Minister to study the question of transfer over of responsibilities on family planning activities in Government institutions from the Singapore Family Planning Association (S.F.P.A.) to Government. The Committee consisted of an independent Chairman, Mr. R. Quahe, Deputy Vice-Chancellor, University of Singapore, a Representative of the Ministry of Health (Dr. K. Kanagaratnam, Deputy Director of Medical Services (Health)) and a Representative of the Singapore Family Planning Association (Mr. A. Fraser, President).

On 29th June, 1965, an unanimous report was submitted by the Review Committee to the Minister which, *inter alia*, recommended to Government to take over all responsibilities for clinical work, research and publicity in the field of family planning with effect from 1st October, 1965.

In September 1965, Government published a White Paper on Family Planning enunciating a five-year plan in Family Planning at a cost of \$1,000,000. The Singapore Family Planning and Population Board was to be set up to implement the plan. The Board would operate within the framework of the Public Health Division, being serviced by the Training and Health Education Branch and the Maternal and Child Health Branch. Three *ex-officio* members including the Chairman and Executive Secretary were from the Public Health Division, which services the Board.

Preliminary organisational work in all the varied aspects for the take-over of Family Planning activities was completed by the end of 1965. The target date was 1st January, 1966, when Family Planning work in all Singapore Family Planning Association Clinics in Government institutions would be transferred over to the Government. This transfer of records, etc., was effected satisfactorily by the S.F.P.A. in the last week of December 1965. A Bill establishing the Singapore Family Planning and Population Board was tabled in Parliament in December and was passed on 31st December, 1965.

(2) *Survey of Anti-Mosquito Organisation*

On 12th December, 1964, Professor M. J. Colbourne, Professor of Social Medicine and Public Health, University of Singapore, was requested to conduct an enquiry into the Anti-Malaria/Anti-Mosquito Services in the Republic. The terms of reference of the enquiry were:

- (i) to examine the City and Rural Anti-Malaria/Anti-Mosquito Services in Singapore in respect of organisations, administration, staffing, operational methods and techniques and operational efficiency;
- (ii) in the light of the findings, to make recommendations.

The Senior Health Officer (Training, Health Education and Special Services) was the liaison officer of the Public Health Division with Professor Colbourne.

Professor Colbourne's report was published in July 1965.

The report brought into focus the need to consider the anti-malaria/anti-mosquito services within the context of changes in techniques that have occurred and also outlined the need for more scientific assessment of the effectiveness of conventional methods of control now in use. The need to establish a high powered Vector Control Unit was emphasised; approval for this was received and a Health Officer and an Entomologist were appointed.

As a follow-up, it was decided to make malaria a notifiable disease; the old Destruction of Mosquito Ordinance was to be reviewed in line with modern requirements. The traditional emphasis on anti-malaria control required to be re-oriented to anti-mosquito control.

Though malaria has been non-existent, mosquito-borne diseases are a major public health problem. The diseases transmitted by the Arbor-viruses including Hæmorrhagic Fever and the tremendous increases of both *Aedes* and *Culex* mosquito population as a result of greater urbanisation, etc., constitute a serious challenge for the next few years.

(3) *Typhoid Outbreak in Chung Cheng High School, 1965*

Typhoid is endemic in Singapore. From time to time it has erupted in major outbreaks. In March 1965, an epidemic of this disease occurred in Chung Cheng High School, Goodman Road, Singapore. The first case was notified on 10th March, 1965. (Since then the number of confirmed cases from this School had been discovered almost every day). By 4th April, 1965, altogether 99 cases with two deaths had occurred from this institution.

Epidemiologic investigations established that a hawker selling cold drinks including coconut water who was incubating the disease was the source of the outbreak. He was too ill to continue his trade and fortunately had ceased selling drinks there when the outbreak occurred. While this was a self-limiting factor he had unfortunately infected a large number of students before he stopped selling drinks.

All other hawkers at and around the School were sent for medical examination but the results were negative. During the epidemic, a total ban on the sale of food and drink was imposed in the School.

Other sanitary measures carried out in the School included:

- (i) anti-fly measures;
- (ii) general clean up of the grounds and premises;
- (iii) improvements in canteen facilities;
- (iv) repairs of defective toilets; and
- (v) house survey of all hawkers at and around the school.

The outbreak emphasised the danger presented by the large number of food hawkers who sell food and drink, often prepared in conditions which are far from satisfactory. The need for more rigorous control of food hawkers with medical surveillance and supervision of places of preparation is recognised but implementation will await the Hawker Re-organisation and the publication of the Hawkers Code planned for next year.

(4) *Control of Cattle*

The Cattle Ordinance was passed by the Legislative Assembly in November 1964 and came into force on 1st January, 1965. The provisions of the Ordinance enable the Minister to demarcate areas where cattle may be kept in sheds under licence and also demarcate a Restricted Area where no cattle are allowed. The Ordinance became necessary to enable effective control over stray cattle and unsanitary cattlesheds which became a major problem consequent to rapid growth of the City, absence of grazing land and the indifferent attitude of cattle owners who did not keep their cattle in licensed sanitary sheds in suitable parts of the rural areas.

At the beginning of the year, the total number of buffaloes and oxen in Singapore was 4,520; of these 2,530 belonging to 171 owners were in the Restricted Area. These owners were served with notices early in January 1965, giving them a grace period of six months to move their animals out of the Restricted Area.

At the end of June 1965, the number of buffaloes and oxen in the Restricted Area had been reduced to 1,508 i.e. 1,022 animals had been removed since 1st January, 1965.

The period of grace which expired on 30th June, 1965, was extended one month to 31st July, 1965. By 31st July, 1965, the number of buffaloes and oxen in the Restricted Area had been further reduced to 1,407. By the end of the year, the number of animals in the Restricted Area remained at 3,352.

In August 1965, the first phase of summary action against cattle owners in the Restricted Area commenced. All owners of buffaloes and oxen whose animals were in the Restricted Area were prosecuted.

A cattle squad was set up in February 1965, to deal mainly with stray cattle. Any animal straying on public or private property away from its shed was liable to seizure. During the year, 53 animals were seized consisting of 43 buffaloes and oxen and 10 goats. The meat including viscera of these animals were distributed to approved charitable institutions.

The action to seize stray cattle has had a salutary effect. A happy result of the present position is that stray cattle are no longer seen in the urban and suburban areas and those that remain, even in the Restricted Area are confined to their sheds. The removal of all animals from the Restricted Area will take some more time. Prosecutions for having sheds in the Restricted Area have not been satisfactory in stimulating more rapid removals. Licensing of cattlesheds in the Unrestricted Area up to public health standards is to be progressively effected as in many cases, owners are unable to comply at one time with all the health provisions of the Cattle Regulations.

(5) *Tetra ethyl lead poisoning in West Coast Road*

At a building site at 8½ m.s. West Coast Road, Pasir Panjang Garden Estate, workers engaged in digging a trench to lay sewer lines were exposed accidentally to dangerous fumes of an alkyl-lead compound. Tetra-ethyl lead

(TEL) compound presumably buried in drums during the last War (1942–45) was the source of the trouble. The TEL when exposed to air contaminated the work-site. 34 workers reported symptoms of lead-poisoning between 13th July, 1965 and 25th July, 1965; two of them died later.

Immediate measures were taken to prevent further exposure by workers. An expert from the OCTEL Company came down from the United Kingdom to advise in the control, and to deal with the contamination. The area was successfully decontaminated; the sewer line was diverted to avoid any possible danger in the future to repair or maintenance work on sewers.

(6) *Problems of urbanisation, physical development and industrialisation*

Singapore, in common with many urban communities all over the world, is facing the acute problem of maintaining and improving health standards in an urbanising tropical environment. Standards of environmental health have been affected by the increase of people, houses, and hawkers. Hazards of pollution of soil, food, water, air and of insect vectors are greater now than they were ten years ago. The control of the environment is being controlled and maintained by many agencies. Effective integration of the work of these various agencies is necessary to maintain and improve the quality of the environment. Industrial development, urban renewal and physical redevelopment have vital health components which require to be recognised from the outset. In a tropical environment, many additional factors are present which do not present problems in building and development in temperate areas. There is a close relationship between solid and liquid waste disposal and the population of rodent, insect-vectors, etc. Water usage has risen markedly in Singapore without corresponding increase of effective sewerage and surface drainage systems to cope with the increase leading to public health hazards.

During the year, these problems were brought into focus in Singapore. The population of *Aedes* and *Culex* mosquitoes has risen much. Other disease bearing vectors also present problems. Haemorrhagic fever may be regarded as the major mosquito-borne problem. A massive mosquito eradication scheme may have to be undertaken to cope with the situation in the future. In public cleansing studies were completed for the development of new refuse disposal facilities to replace conventional sanitary land fill for which suitable land is becoming scarce. Studies are in hand on the best manner to cope with the anticipated refuse of nearly 1,000 tons by 1970. Addition to the refuse collection fleet during the year increase of personnel and a new disciplinary code had led to some improvement of the public cleansing situation.

The problem of urbanisation and industrial development is growing to be the major public health problem and will call for greater emphasis in the future. The overall improvement in health standards shown by falling mortality and morbidity, improved growth standards by better nutrition, maternal and childcare, by broad-based immunisation and disease control programmes will be affected if the problem of health hazards of urbanisation and industrialisation is not resolved.

THE ENVIRONMENTAL HEALTH BRANCH

This Branch is responsible for —

- (a) general hygiene and sanitation (including cleansing);
- (b) food hygiene and control of the sale of food and drugs;
- (c) anti-malaria services and mosquito control.

The Senior Health Officer, Environmental Health (Dr. V. M. S. Thevathasan, L.M.S., D.P.H.) is the administrative head of the Branch. The island is divided into six districts namely Katong, Serangoon, Bukit Panjang/Jurong, Southern Islands, City South and City North, each district under the charge of a Health Officer.

Maintenance of general sanitation by inspection and licensing is the main function of the Public Health Inspectorate. Mosquito, fly and other complaints of public health nuisances are dealt with.

Cleansing services in the City are under the charge of the Superintendent, Public Cleansing Department, while in the Rural Districts these are under the respective Health Officers.

The Environmental Health Branch maintains a reasonable standard of food hygiene in food establishments. Samples of food and drugs are taken and submitted to the Chief Chemist for analysis. In 1965, 125,737 lbs. 9 $\frac{3}{4}$ ozs. of unsound food and 588 lbs. of unsound drugs were destroyed while 15 bottles of substandard multi-vitamin syrup and two boxes of mascara containing lead were forfeited by Court Order.

Anti-malaria and anti-mosquito services were maintained at a conventional level and there was freedom from malaria during the year.

THE QUARANTINE AND EPIDEMIOLOGY BRANCH

The Senior Health Officer, Quarantine and Epidemiology (Dr. S. R. Sayampanathan, M.B., B.S., D.P.H.) is in charge of this Branch.

The Quarantine Section is responsible for the control of dangerous infectious diseases by checking international traffic. In 1965, 118,533 passengers and crews were checked by the Marine Port Health Service and 174,898 passengers and crew by the Airport Health Service. This shows a drop from the previous year of 132,171 by sea (excluding 35,474 by small craft from neighbouring islands) and 156,645 by air in 1965.

The Epidemiology Section deals with minor infectious disease conditions locally, supervise Aedes Control measures against Yellow Fever around the Paya Lebar International Airport and maintains a regular check on rodents by systematic trapping in the Port Area as a plague prevention exercise.

The Vaccination Centre under this Branch affords free vaccination service to the public and travellers. International vaccination certificates priced at a dollar each are also issued here. A total of 50,356 vaccinations were given in the Centre in 1965 compared with 56,736 vaccinations in 1964.

THE SCHOOL HEALTH SERVICE

The School Health Service is centrally administered at the Institute of Health, Outram Road. Dr. Tan Kah Hong, M.B., B.S., D.P.H., is the Senior Health Officer, Schools. The Service is responsible for the prevention of disease and the promotion and maintenance of health among the school children.

The following services are provided:

- (a) routine and special medical examination of school children;
- (b) treatment of minor ailments and nutritional defects;
- (c) reference of cases to specialists in the various institutions for investigations, treatment or advice;
- (d) control of tuberculosis in the school population including teachers, hawkers and other staff;
- (e) control of infectious diseases;
- (f) sanitary inspection of school premises;
- (g) ensuring the compliance of the provisions of the Education Ordinance (1957) and the Regulations made thereunder;
- (h) arrangements for special care for handicapped children;
- (i) supervision of supplementary feeding and the issue of free non-fat milk among the needy children.

At the end of 1965 there were 595 schools in Singapore as compared to 584 at the end of 1964. There were 59,910 new entrants as against 59,084 in 1964. The total school population rose from 457,136 in 1964 to 482,111 in 1965, an increase of 24,975 pupils.

The School Health Service has remained static for the past 6–7 years and it has not been possible to include more essential features into the Service as a result of the shortage of personnel. Child guidance, specialised services for children and school health education are fields that can be developed in the future. School medical inspections are rather hurried because of numbers dealt with and follow-up inadequate owing to shortage of nursing staff.

THE MATERNAL AND CHILD HEALTH SERVICES

These services are administered on island-wide basis from the Institute of Health, Outram Road. Dr. M. Lim, M.R.C.S., L.R.C.P., D.P.H., is the Senior Health Officer, Maternal and Child Health. The main function is in preventive medicine although a curative service for minor ailments has been included.

The following services are provided through the 32 main clinics, ten kampong midwife centres and 22 visiting centres:

- (a) Antenatal care.
- (b) Natal care through the Domiciliary Midwifery Service and Domiciliary After-care Service operating at main clinics and kampong midwife centres with resident midwives.

- (c) Post-natal care.
- (d) Immunisation against smallpox, diphtheria, whooping cough, tetanus and poliomyelitis for pre-school children.
- (e) Supervision of midwives.

In 1965 attendances at antenatal clinics total 161,049 as compared with 141,473 in 1964. Attendances at child health clinics also continued to increase. There were 457,906 attendances by infants and 428,211 attendances and 366,345 respectively.

This Service continues to provide a growing service. The decision to incorporate family planning into this service will increase the workload. A review of certain practices and the development of full sessions at all Maternal and Child Health Centres, instead of on a sessional basis, will be required to cope with the growing demand.

THE TRAINING AND HEALTH EDUCATION BRANCH

This Branch, under a Senior Health Officer (Dr. Thong Kah Leong, M.B., B.S., D.P.H.), is responsible for:

- (a) Training of ancillary health personnel including:
 - (i) Public Health Inspectors.
 - (ii) Public Health Nurses.
 - (iii) Public Health Assistants.

The training courses for Public Health Inspectors and Public Health Nurses are carried out under the auspices of the Royal Society of Health in London, supervised by the Regional Examination Board for Malaysia and Singapore. The Deputy Director of Medical Services (Health), Dr. K. Kanagaratnam, is the Chairman of the Overseas Examination Board and the Senior Health Officer, Training and Health Education, Dr. Thong Kah Leong, is the Secretary of the Board.

(b) Health Education:

General dissemination of health education to the public and to ancillary health staff is done through participation of Health Education personnel in training and refresher courses in health education for various categories of health personnel such as midwives and nurses who in turn will disseminate health knowledge to the public with whom they come into contact. This section is essentially a resource department for other departments/organisations which may request for health education material, specialised equipment or advice on thods and techniques, from time to time. Mrs. L. E. Haas, W.H.O. Adviser in Health Education, arrived in Singapore on a project to assist in the development of the service.

(c) Special Assignments for the Public Health Division in various fields.

During the year two major projects included assisting in the Anti-Mosquito Review and in planning for the takeover of family planning.

HAWKERS AND MARKETS DEPARTMENT

This Department is under the Superintendent, Hawkers and Markets Department and deals with the licensing and control of hawkers, the supervision of public markets, and licensing and control of private markets including private lands used for accommodation of static hawkers.

The preparation for a new Hawkers Code and the basis for re-organisation of the Department and for more effective control of the hawkers was under study. Mr. Lim Chooi Sian, Director of the Central Complaints Bureau, was seconded for duty as officer in charge of Re-organisation in November 1964, and was engaged in these duties throughout 1965.

Two new markets were officially opened in 1965.

OTHER SERVICES UNDER PUBLIC HEALTH
HEADQUARTERS ADMINISTRATION

These Services are:

- (a) The Public Health Engineering Unit.
- (b) Cemeteries and Crematoria Unit.
- (c) Personnel Unit.
- (d) The Transport Centre.

During the year, these Sections continued to provide specialised services for the Division.

VITAL STATISTICS

TABLE 19

POPULATION ESTIMATES BY RACIAL GROUP AND SEX AS AT
30TH JUNE, 1965
Thousands

	Total	Malays*	Chinese	Indians and Pakis- tanis	Eura- sians	Euro- peans	Others
Total Population ..	1,864.9	266.6	1,396.5	153.7	15.1	15.8	17.2
Males ..	967.5	136.8	705.9	98.1	8.1	8.9	9.7
Females ...	897.4	129.8	690.6	55.6	7.0	6.9	7.5

1. *Include Indonesians.

2. The Population Estimates exclude the following categories enumerated in the June 1957 census:—

- (a) Non-Locally domiciled services personnel (including United Kingdom—based civilians employed by the Services) and their families 27,299
- (b) Transients afloat 3,466

3. Births and deaths of persons within category 2 (a) are excluded from these estimates.

4. Births and deaths of persons within category 2 (b) are included in these estimates, but the number of such is negligible.

TABLE 20
TABLE 20 GIVES VITAL STATISTICS IN THE STATE OF SINGAPORE FOR PAST 5 YEARS

	1961		1962		1963		1964		1965	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Live Births ..	59,930	35.5	58,977	34.0	59,577	33.6	58,217	32.0	55,736	29.9
Still Births ..	766	12.6	740	12.4	739	12.3	694	11.8	651	11.5
Perinatal Deaths ..	1,593	26.2	1,593	26.7	1,578	26.2	1,539	26.1	1,433	25.4
Neonatal Deaths ..	1,059	17.7	1,127	19.1	1,097	18.4	1,143	19.6	993	17.8
Infant Deaths (Birth to 1 year)	1,937	32.3	1,843	31.2	1,674	28.1	1,738	29.9	1,462	26.2
Maternal Deaths ..	24	0.39	23	0.4	21	0.3	..	..	..	..
Deaths ..	10,027	5.9	10,178	5.9	10,138	5.7	..	..	..	..

* The Crude Birth Rate —Number of live births/1,000 mid-year population.

† The Still Birth Rate —Number of still births/1,000 still and live births.

‡ The Perinatal Mortality Rate —Number of deaths under 7 days of age plus still births/1,000 still and live births.

§ The Neonatal Mortality Rate —Number of deaths under 28 days of age/1,000 live births.

|| The Infant Mortality Rate —Number of deaths under 1 year of age/1,000 live births.

¶ The Maternal Mortality Rate —Number of maternal deaths per 1,000 total live and still births.

** The Crude Death Rate —Number of deaths/1,000 mid-year population.

These figures have been obtained from the 1961 Report on the Registration of births and deaths, marriages and persons, and from the monthly demographic bulletins for the State of Singapore for 1962, 1963, 1964 and 1965.

TABLE 21

TABLE 21 GIVES THE INFANT MORTALITY RATE BY ETHNIC GROUPS IN SINGAPORE FOR 1962, 1963, 1964 AND 1965

				1962	1963	1964	1965
				Infant Mortality Rate	Infant Mortality Rate	Infant Mortality Rate	Infant Mortality Rate
All Races	..	..	..	31.2	28.1	29.9	26.2
Malays	..	..	..	48.0	39.3	42.0	37.4
Chinese	..	..	..	27.2	25.1	26.6	23.5
Indians	..	..	..	29.7	29.5	30.4	24.6
Eurasians	..	..	..	36.0	12.7	16.0	16.9
Europeans	..	..	..	3.4	39.2	23.6	18.9
Others	..	..	..	18.6	9.8	18.5	23.0

These figures have been obtained from the Monthly Demographic Bulletin issued by the Department of Statistics, Singapore.

TABLE 22

TABLE 22 GIVES PERINATAL MORTALITY RATE BY ETHNIC GROUPS IN SINGAPORE, 1962, 1963, 1964 AND 1965

				1962	1963	1964	1965
				Perinatal Mortality Rate	Perinatal Mortality Rate	Perinatal Mortality Rate	Perinatal Mortality Rate
All Races	..	..	..	26.7	26.2	26.1	25.4
Malays	..	..	..	31.9	28.4	32.2	31.4
Chinese	..	..	..	24.7	24.7	23.7	23.0
Indians	..	..	..	32.5	33.4	33.7	32.9
Eurasians	..	..	..	27.5	12.5	15.8	26.7
Europeans	..	..	..	6.8	57.5	31.0	18.7
Others	..	..	..	26.5	19.3	16.0	14.6

These figures have been obtained from Monthly Demographic Bulletin issued by the Department of Statistics, Singapore.

SINGAPORE VITAL STATISTICS, 1963 — 1965

(a) BY PLACE OF USUAL RESIDENCE

Vital Events	1963				1964				1965			
	Total	City	Rural	Other*	Total	City	Rural	Other*	Total	City	Rural	Other*
Live-births	59,530	34,479	24,938	113	58,217	33,693	24,418	106	55,725	32,097	23,532	96
Still-births	739	415	323	1	694	437	225	2	654	382	272	..
Total births	60,269	34,894	25,261	114	58,911	34,130	24,673	108	56,379	32,479	23,804	96
Maternal deaths	21	10	11	..	24	11	13	..	12	7	4	1
Perinatal deaths	1,592	950	640	2	1,539	962	574	3	1,438	873	563	2
Neonatal deaths	1,097	673	423	1	1,143	707	435	1	995	621	372	2
Infant deaths	1,674	988	684	2	1,738	1,046	689	3	1,464	882	577	5
Still-birth Rate†	12.3	11.9	12.8	8.8	11.8	12.8	10.3	18.5	11.6	11.8	11.4	..
Maternal Mortality Rate‡	0.3	0.3	0.4	..	0.4	0.3	0.5	..	0.2	0.2	0.2	10.4
Perinatal Mortality Rate†	26.4	27.2	25.3	17.5	26.1	28.2	23.3	27.8	25.5	26.9	23.7	20.8
Neonatal Mortality Rate‡	18.4	19.5	17.0	8.8	19.6	21.0	17.8	9.4	17.9	19.3	15.8	20.8
Infant Mortality Rate‡	28.1	28.7	27.4	17.7	29.9	31.0	28.2	28.3	26.3	27.5	24.5	52.1

Note:— *Others refers to the States of Malaya and 'Overseas'.

†Rate per thousand total live-births and still-births.

‡Rate per thousand live-births.

The above figures exclude events occurring among non-locally domiciled Services personnel (including United Kingdom based civilians employed by the Services) and their families.

(b) BY REGISTRATION AREA

Vital Events	1963			1964			1965		
	Total	City	Rural	Total	City	Rural	Total	City	Rural
Live-births	59,530	51,043	8,487	58,217	50,287	7,930	55,725	48,548	7,177
Still-births	739	672	67	694	640	54	654	587	67
Total births	60,269	51,715	8,554	58,911	50,927	7,984	56,379	49,135	7,244
Maternal deaths	21	20	1	24	20	4	12	12	..
Perinatal deaths	1,592	1,476	116	1,539	1,429	110	1,438	1,317	121
Neonatal deaths	1,097	1,012	85	1,143	1,059	84	995	916	79
Infant deaths	1,674	1,448	226	1,738	1,517	221	1,464	1,285	179
Still-birth Rate†	12.3	13.0	7.8	11.8	12.6	6.8	11.6	11.9	9.2
Maternal Mortality Rate†	0.3	0.4	0.1	0.4	0.4	0.5	0.2	0.2	..
Perinatal Mortality Rate†	26.4	28.5	13.6	26.1	28.1	13.8	25.5	26.8	16.7
Neonatal Mortality Rate†	18.4	21.6	10.0	19.6	21.1	10.6	17.9	18.9	11.0
Infant Mortality Rate†	28.1	28.4	26.6	29.9	30.2	27.9	26.3	26.5	24.9

Note:— *Others refers to the States of Malaya and 'Overseas'.

†Rate per thousand total live-births and still-births.

‡Rate per thousand live-births.

The above figures exclude events occurring among non-locally domiciled Services personnel (including United Kingdom based civilians employed by the Services) and their families.

PUBLIC HEALTH DIVISION

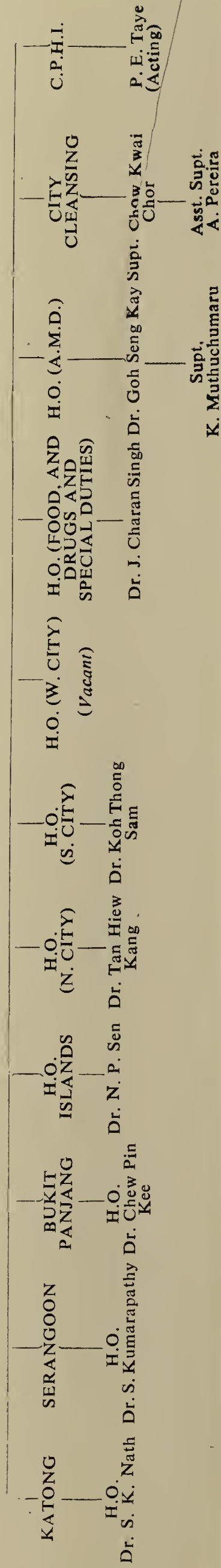
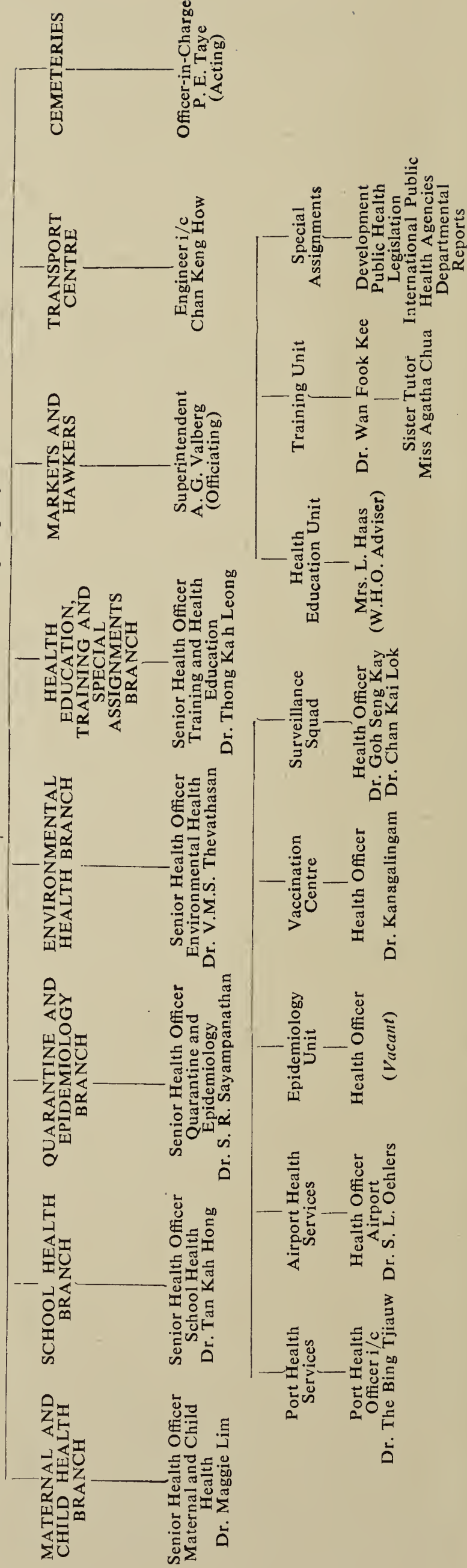
HEADQUARTERS

Deputy Director of Medical Services (Health)

Dr. K. Kanagaratnam

{ Assistant Secretary
 S.E.O. (Personnel)
 Public Health Matron
 Establishment Section
 and General
 Finance Section
 Public Health Engineering
 Unit
 Registry
 — C. E. Weerpass
 — W. Chew Keng Yong
 — Madam Alice Chia
 — Miss Gladys Chia, Chia Boon Seng
 — Lee Kiat Kar, Leong Cheok Yin
 — T. F. Lye
 — S. Hamid

H.Q. ADMINISTRATION BRANCH



Chapter Seven

THE ENVIRONMENTAL HEALTH SERVICES

INTRODUCTION

THE Environmental Health Services provided by this Branch include the following:

- (a) General Hygiene and Sanitation.
- (b) Food Hygiene and the Control of the Sale of Food and Drugs.
- (c) Anti-Malaria and Mosquito Control.

ORGANISATION AND STAFF

The Senior Health Officer (Environmental Health) is the administrative head of the Branch and maintains an overall control of all the services rendered by the Branch. The island is divided into six districts viz. Katong, Serangoon, Bukit Panjang/Jurong, Southern Islands, City South and City North, each district under the charge of a Health Officer.

The Chief Public Health Inspector is in charge of the Public Health Inspectorate. Each Rural District has a Senior Public Health Inspector and each City District has two Senior Public Health Inspectors. These work under the direction of the Health Officers.

In the City, the Superintendent, Public Cleansing Department (City) is in charge of the Cleansing Services while in the Rural Districts these Services are under the Health Officers.

The Superintendent, A.M.D. (City) and the Chief Food and Drugs Inspector work under their respective Health Officers.

Staff

(a) Health Officers:

Senior Health Officer	..	..	..	1
District Health Officers	..	..	..	6

(b) Public Health Inspectorate:

Chief Public Health Inspector	..	..	1
Chief Food and Drugs Inspector	..	..	1
Senior Public Health Inspectors	..	..	5
Food and Drugs Inspectors	..	..	4
Public Health Inspectors	..	..	37
Probationary Public Health Inspectors		..	11
Piggery Overseers	..	..	4

(c) Cleansing:

City

Superintendent	1 (acting)
Assistant Superintendents	2 (acting)
Divisional Cleansing Inspectors	4 (acting)
Senior Cleansing Inspectors	6
Cleansing Inspectors and Public Health Assistants	37
Sub-Overseers	48

Rural

Senior Cleansing Inspectors	3
Cleansing Inspectors and Public Health Assistants	13
Technical Subordinates	16
Cleansing Overseers	14

(d) Anti-Mosquito Department:

City

Health Officer	1
Superintendent	1
Technical Subordinate (Superscale)	1
Technical Subordinates (Special Grade)	3
Technical Subordinates	17
Laboratory Assistant	1

Rural

Senior Technical Subordinates	4
Technical Subordinates	20

Secondment:

- 2 Public Health Inspectors were seconded to the Port Health Office.
- 2 Public Health Inspectors were seconded to the Quarantine and Epidemiology Branch.
- 2 Public Health Inspectors were seconded to the City Abattoirs.

GENERAL HYGIENE AND SANITATION

This includes: (a) general sanitation, (b) water supplies, (c) licensed premises, (d) offensive and dangerous trades, (e) the cleansing services, (f) kampong sanitation.

(a) *General Sanitation*.—This is the main function of the Public Health Inspectorate. All premises licensed by the Environmental Health Branch are inspected regularly. In addition unlicensed premises are investigated and, if necessary, court action taken. Also, the Inspectorate reports on health requirements for Public and Beer Houses, Printing Presses, Hotels and Lodging Houses, places of entertainment and Massage Parlours.

Complaints.—A large part of the work of the Branch is the investigation of numerous complaints from the public about health nuisances. Necessary actions are taken to abate and minimise health nuisances once found and, if necessary, reports are sent to other departments for actions.

The following table gives a summary of the complaints received.

SUMMARY OF NATURE AND NUMBER OF COMPLAINTS RECEIVED
FOR THE YEAR 1965

Nature of Complaints	City	Katong	Serangoon	Bukit Panjang / Jurong	Southern Islands	Total
Mosquito ..	916	144	84	73	1	1,218
Fly	61	27	7	21	1	117
Smoke .. ..	..	..	..	2	..	2
Smell .. ..	..	..	17	15	..	32
Drainage .. ..	..	..	49	28	..	77
Others	647*	243*	151	61	..	1,102*
Total ..	1,624	414	308	200	2	2,548

*In the City and Katong District this includes Smoke, Smell and Drainage complaints.

Housing.—In connection with building and planning, this Branch checked layouts and permits, stating requirements and giving comments from the health point of view.

The following table gives a summary of the building plans and planning consultations dealt with in 1965.

NUMBER OF BUILDING PLANS AND PLANNING CONSULTATIONS
HANDLED BY THE BRANCH FOR 1965

	City	Katong	Serangoon	Bukit Panjang / Jurong	Southern Islands	Total
No. of building plans dealt with ..	408	56	80	141	7	692
No. of planning consultations dealt with ..	70	32	27	20	..	149
No. of housing permits dealt with ..	..	12	3	3	..	18
No. of homes inspected in connection with environmental sanitation	not available	2,778	9,656	13,320	56	25,810 (excluding City Area)

(b) *Water Supplies*.—The main source of water supply is piped water.

Standpipes are provided in kampongs and other remote areas. Recommendations as to the site and drainage are usually sought from this Branch before standpipes are erected.

Well water still constitutes an important source in the more remote areas. Anti-malaria wells provide a relatively safe water supply from subsoil pipes in certain areas.

(c) *Licensed Premises*.—The issuing of all new licences is considered and approved by the Licensing Policy Committee. In addition, all problems pertaining to licensing are directed to this Committee for consideration and recommendation. The Public Health Inspectorate make regular visits to all licensed premises to ensure that satisfactory health standards are maintained.

NUMBER OF INSPECTIONS BY THE PUBLIC HEALTH INSPECTORATE, 1965

	City	Katong	Serangoon	Bukit Panjang / Jurong	Southern Islands	Total
Sauce Factories ..	137	57	104	42	..	340
Oil Mills ..	67	36	12	42	..	157
Sawmills ..	65	30	4	104	..	203
Smoke Observations	81	10	..	4	..	15
Places of Entertainment ..	498	90	117	96	..	801
City Markets/Private Markets ..	90	..	25	..	..	115
Grinding Mills ..	117	42	44	76	..	279
Gold Smith ..	13	..	..	..	..	13
Printing Presses ..	585	57	10	3	..	655
Licensed Premises	19,630	5,383	7,717	2,259	34	35,023
Unlicensed Premises	1,221	755	64	636	..	2,676
Public Houses ..	571	439	284	166	..	1,460
Hotels and Native Passenger Lodging Houses ..	311	95	19	..	..	425
Inspecting Notices	69	..	96	..	..	165
No. of visits paid in cautionary cases	21	..	23	..	..	44
Serving Notices ..	94	..	74	189	..	357
Piggeries ..	..	..	93	2,534	..	2,627
No. of Inspections for Daily Fines ..	108	..	..	..	..	108
Other Premises ..	14,092	1,075	1,115	724	..	17,006
Total ..	37,690	8,069	9,801	6,875	34	62,469

NUMBER OF LICENSED PREMISES 1965

			City	Katong	Serangoon	Bukit Panjang/ Jurong	Total
Eating House	..	..	171	213	192	118	1,294
Restaurant	..	..	361	..	19	..	380
Coffee Shop	..	..	124	12	16	13	165
Iced Water and Cold Drinks	..		23	7	..	..	30
Soda Fountain	..	..	2	..	..	..	2
Meat Shop	..	..	99	29	34	7	169
Possession of Wild Boar Meat			4	..	..	..	4
Milk Bar	..	..	3	1	2	..	6
Aerated Water Factory	..		12	1	1	..	14
Bakery	..	..	46	22	29	5	102
Biscuit Factory	..	..	4	1	1	..	6
Cake Shop	..	..	39	1	..	2	42
Ice Cream Factory	..		6	..	..	..	6
Ice Popsicle Manufactory	..	..	..	..	..	..	..
Syrup Making Shop	..	..	8	1	2	2	13
Sweets Making Shop	..		12	1	2	..	15
Margarine Factory	..	..	2	..	..	..	2
Confectionery	..	..	9	4	..	4	17
Food Shop	..	..	49	1	..	..	50
Food Caterer	..	..	1	..	..	..	1
Dairy Shop	..	..	..	..	..	..	..
Ice Cream Distribution	..		5	5	19	4	33
Soya Bean Milk Factory	..		2	..	..	1	3
Manufacturing and Bottling of Orange Squash	..		1	..	..	..	1
Manufacturing and Bottling of non-carbonated drinks	..	..	..	..	..	2	2
Mono-Sodium Glutamate	..	..	..	..	..	..	..
Milk Vendor	..	..	..	..	..	..	..
Pasteurising and Packing Milk Plant	..	..	..	..	..	3	3
Vegetable Shop	..	..	..	..	20	3	23
Vermicelli Factory	..	..	..	5	8	4	17
Sugar Refinery	..	..	..	..	1	..	1
Krapuk Making	..	..	..	..	1	..	1
Peanut Butter Canning	..	..	..	..	1	..	1
Total	..		1,583	314	335	168	2,400

NUMBER OF LICENSED PREMISES IN SOUTHERN ISLANDS, 1965

Eating House	..	..	..	26
Restaurant ..	..	..	..	1
Meat and Ice Cream Shops	..	..	..	1
Fruit Shops ..	..	..	..	3
Vegetable Shops	..	..	..	2
Samsu Shop ..	..	..	..	1
Total ..				34

(d) *Offensive and Dangerous Trades.*—These are summarised as follows:

LIST OF LICENSED PREMISES FOR OFFENSIVE TRADES, 1965

		TOTAL NO. OF LICENSED PREMISES					
		City	Katong	Serangoon	Bt. Panjang/ Jurong	Southern Islands	Total
Blachan Store	..	3	—	—	—	—	3
Brick Kiln	..	2	1	—	10	—	13
Coffee Roasting Factory	..	8	6	1	2	—	17
Dye House	..	1	—	—	—	—	1
Drying and Sorting Fish	..	1	—	—	—	—	1
Fruit Preserving	..	—	1	2	—	—	3
Laundry	..	309	83	64	26	—	482
Oil Mill	..	12	2	7	5	—	36
Refining Precious Metal by Acid Process	..	7	—	—	—	—	7
Sago Factory	..	4	—	1	3	—	8
Sauce Factory	..	18	—	8	2	—	28
Sauce Mixture Factory	..	2	6	1	—	—	9
Sheep and Goat Pen	..	—	2	—	—	—	2
Soap Boiling	..	9	5	4	4	—	22
Sugar Boiling	..	3	—	—	—	—	3
Tannery	..	2	—	5	—	—	7
Slaughter House	..	—	2	—	—	—	2
Private Markets	..	—	—	6	—	—	6
Importation of Meat	..	13	—	—	—	—	13
Cattle Shed	..	—	24	38	66	—	128
Lime Making	..	—	7	—	—	—	7
Rattan Store	..	—	—	2	1	—	3
Grinding Mill	..	4	11	5	7	—	27
Pottery Works	..	—	—	4	3	—	7
Fertiliser Factory	..	—	—	1	—	—	1
Canneries	..	—	—	—	2	—	2
Piggery	..	—	279	382	894	—	1,555
Sick Receiving House	..	3	—	—	—	—	3
Miniature Zoo	..	—	—	1	2	—	3
Fruit Shop	..	—	—	1	—	—	1
Fish Shop	..	—	—	1	—	—	1
Soya Bean Skimming	..	—	—	1	—	—	1
Feed Mill	..	—	—	1	—	—	1
Total	..	401	429	546	1,027	—	2,403

LIST OF DANGEROUS TRADES LICENSED IN RURAL AREAS, 1965

Nature of Licence	TOTAL NO. OF LICENSED PREMISES			
	Katong	Serangoon	Bt. Panjang/ Jurong	Total
Attap Store	25	23	18	66
Timber Yard, Sawmill, Furniture Shop	55	45	40	140
Firewood Store	12	44	9	65
Charcoal Store	26	28	5	59
Calcium Carbide Store	6	2	3	11
Petroleum Store	34	3	48	85
Kerosene Store	1	2	2	5
Fire Cracker Store	25	3	3	31
Smithy/Foundry	2	4	3	9
Rubber Smoke House	2	12	2	16
Rubber Factory	—	4	1	5
Garage	31	41	26	98
Others	2	12	14	28
Total	221	223	174	618

Footnote:—Southern Islands have 1 smelting work, 3 Petroleum Installations, 3 Open air cinemas and 3 laundries (not included in above table).

(e) *The Cleansing Service.*—This important service functions on a district basis and is provided by the Public Cleansing Department (City) for the City Area and Rural District Health Departments for the rest of the Republic.

These services include: (1) cleansing of public streets, backlanes and drains daily; (2) removal of refuse from premises (dustbins) whether trade or domestic; (3) principal streets were sprinkled daily by three water vans and the drains flushed by 47 metered flushing handcards from street hydrants; (4) disposal of refuse by tipping at Kolam Ayer, Clementi Road and Koh Sek Lim Road, Dumping Grounds; (5) disposal of condemned goods, carcasses, old records, etc. from Private firms and Government Institutions; (6) supervision of Cleansing of Outlet drains carried out by Contract; (7) removal of nightsoil from premises not sewered; (8) providing sanitary facilities for wayangs, circus, and major Public functions.

A new special work force known as the Emergency Cleansing Corps came into operation with effect from 1st October, 1965. The strength at present is 384 workers.

This is a disciplined force and is temporarily accommodated and incorporated as a unit of the Singapore Work Brigade but are paid the normal daily rated employees wage rate. This corps is required to perform all aspects of cleansing work and will not work on Sundays and specified paid holidays. At present the Emergency Cleansing Corps is cleaning out big drains, congested hawkers' areas, private streets and vacant beats.

In the City area daily removal of refuse is carried out from houses and business premises along main roads, public streets and housing estates. Refuse collected is either domestic or trade refuse. The collection and disposal of domestic refuse is carried out free of charge but owners of trade premises are levied a charge for the service.

In the Rural area the removal of refuse is done daily from domestic houses and business premises along the main roads, gazetted streets and housing estates. Domestic refuse is removed and disposed of free of charge but trade refuse removal is carried out for a levy. A considerable number of kampongs are provided with labourers to maintain skeleton cleansing services.

Street Watering.—Three Street Watering Vans of 1,000 gallons capacity each used for watering and washing principal streets whenever necessary.

47 flushing handcarts fitted with meters, hoses, etc. were also used for flushing roadside and backlane drains.

The amount of water consumed during the year was 3,870,600 gallons by Water Vans for street watering and 78,975,700 gallons by flushing handcarts for flushing streets, backlane and culverts.

Incinerator.—The 20 tons weigh-bridge was given an annual overhaul and tested up to 15 tons and found to be correct. A certificate of fitness was issued by the Weights and Measures Department.

Combustible refuse amounting to 559 tons were delivered to Kolam Ayer Incinerator by department and other vehicles during the year for destruction by burning.

Refuse Controlled Tip.—Incombustible refuse amounting to 202,120 tons were delivered to the controlled tip at Kolam Ayer Lane by departmental and other vehicles during the year. One B.T.D. 20 Bull Dozer is used to level off refuse.

9,830 tons of incombustible refuse were also delivered to the controlled tip at Clementi Road and 11,768 tons to the controlled tip at Koh Sek Lim Road.

REFUSE DISPOSED OF AT INCINERATOR AND CONTROLLED DISPOSAL SITES FOR THE CITY AREA 1965

	<i>Tons</i>	<i>Tons</i>
COMBUSTIBLE REFUSE DISPOSED OF AT INCINERATOR		
Departmental (Domestic and Trade Refuse and Sweeping)	—	—
Other Sources	559	559
INCOMBUSTIBLE REFUSE DISPOSED OF AT CONTROLLED TIPS		
Departmental—Domestic and Trade Refuse and Sweepings	164,972	—
Drain Refuse and Sweepings		
District Councils—Domestic Refuse, etc.	12,068	—
Other Sources	25,080	202,120
Refuse Collected by the department from Storm Drains used for filling low lying land, etc.	—	—
Total	—	202,679

AVERAGE NUMBER OF BINS OF REFUSE EMPTIED DAILY
FOR THE CITY AREA 1965

				<i>From Dwelling Houses</i>	<i>From Business and Trade Premises</i>	<i>Total</i>
By Wagons	..	..	..	32,728	18,833	51,561
By Handcarts	..	..	..	12,543	2,223	14,766
			Total	45,271	21,056	66,327*

*Each bin at the Housing and Development Board is counted as three bins hence 66,377 instead of 36,000 bins.

COLLECTION OF REFUSE IN RURAL AREA 1965

				<i>Katong</i>	<i>Serangoon</i>	<i>Bukit Panjang/ Jurong</i>	<i>Total</i>
Number of houses	..	..	..	17,070	20,490	4,049	41,409
Amount of Refuse collected in tons			..	18,886	28,560	9,830	57,276
Number of bin centres		..	..	49	92	46	187
Number of street bins		..	..	830	880	422	2,132

EXPENDITURE ON COLLECTION OF DOMESTIC AND TRADE REFUSE,
STREET AND DRAIN CLEANSING AND DISPOSAL—CITY AREA 1965

MILEAGE OF PUBLIC

Year	Expenditure	Population (City Area)	No. of Assessed Buildings	Streets and Roads	Back- Lanes	Tonnage	Cost Per Ton
	\$ c.						\$ c.
1965 ..	4,340,148 00	1,154,100	114,880	261.76	405	164,972	26 30

Conservancy Section.—During the year 5,286,924 pails of Nightsoil collected by the Public Cleansing Department (City) from 13,248 latrines in 11,272 houses were disposed of at the three Nightsoil Disposal Stations, i.e. Albert Street, Peoples Park, Paya Lebar.

32 vans fitted with 80 pails and eight vans fitted with 64 pails capacity were employed on the collection and disposal of nightsoil in the City.

COLLECTION AND DISPOSAL OF NIGHTSOIL IN THE CITY 1965

<i>Year</i>	<i>Expenditure</i>	<i>No. of Vans</i>	<i>No. of Pails</i>	<i>Average Gross Cost per pail on collection and disposal</i>
	\$ c.			
1965 ..	1,005,565 00	40	5,286,924	19 cents

The figures for removal of nightsoil in Rural Areas are shown in the following table:

NIGHTSOIL COLLECTION IN RURAL AREAS, 1965

	<i>Number of Pails removed during the year 1965</i>			
	<i>Katong</i>	<i>Serangoon</i>	<i>Bt. Panjang/ Jurong</i>	<i>Total</i>
No. of pails removed by Contractors	1,389,117	508,250	200,750	2,098,117
No. of pails removed departmentally	963,600	1,340,280	487,640	2,791,520
Total ..	<u>2,352,717</u>	<u>1,848,530</u>	<u>688,390</u>	<u>4,889,637</u>

The nightsoil collected in Rural districts is disposed of by the following methods: (a) trenching, (b) Ulu Pandan Sewage Works (Bukit Panjang/Jurong District), (c) Paya Lebar Nightsoil Pumping Station (Serangoon and Katong Districts).

Public Conveniences.—The Public Cleansing Department (City) cleansed and maintained 98 public conveniences situated at various parts of the City.

Similar service was also rendered in the rural districts.

Aluminium Portable Latrines.—During the year portable aluminium latrines were hired out to wayang performances, etc. and the hiring and service fees collected amounted to \$12,919.

Approved type refuse carrier bins were also hired out at the same time and the hiring and service fees collected amounted to \$12,008.

At present there are 29 aluminium portable latrines kept at various nightsoil stations.

(f) *Kampong Sanitation.*—This work is carried out by the Public Health Engineering Unit under the charge of the Public Health Engineer. The nature of the work carried out includes improvement to existing drainage of kampongs and standpipes, construction of public latrines and wells, and repairs to standpipe aprons.

KAMPONGS SANITATED DURING 1965

	<i>City</i>	<i>Katong</i>	<i>Serangoon</i>	<i>Bukit Panjang/ Jurong</i>	<i>Total</i>
No. of kampongs where sanitation is maintained	20	14	28	15	77
No. of new kampongs sanitated ..	—	—	3	—	3
Total ..	<u>20</u>	<u>14</u>	<u>31</u>	<u>15</u>	<u>80</u>

FOOD HYGIENE AND THE CONTROL OF THE SALE OF FOOD AND DRUGS

The Food and Drugs Section operates on an island wide basis. Its responsibilities are the control of manufacture, storage, preparation and sale of food and drugs, the investigation of food poisoning and the maintenance of food hygiene.

Samples of food, drugs and comestics are taken by the Food and Drugs Inspectorate and submitted for analysis and/or examination. Court action is taken where necessary.

FOOD AND DRUGS SAMPLES

The following samples were submitted for chemical analysis:—

<i>Type of Article</i>					<i>Number of Samples Taken</i>
Formal Food Samples:					
Soya Bean Cakes	..	..	..	..	65
Soya Bean Sauce	..	..	..	..	49
Coriander Powder	..	..	..	..	33
Carbonated Drink	..	..	..	..	22
Non-carbonated Drink	..	..	..	..	35
Coffee Mixture	..	..	..	..	111
Chilly Sauce ..	..	..	..	..	30
Coloured Cakes	..	..	..	..	59
Groundnut Oil	..	..	..	..	27
Butter ..	..	..	..	..	29
Tomato Sauce ..	..	..	..	..	26
Sweetened Ice Drinks	..	..	..	..	49
Coffee Powder ..	..	..	..	..	2
Sweet Meat ..	..	..	..	..	68
Syrup with Vitamin C	..	..	..	..	37
Margarine ..	..	..	..	..	21
Chilly Powder ..	..	..	..	..	33
Tea ..	..	..	..	..	16
Tea Dust ..	..	..	..	..	23
Cough Mints ..	..	..	..	..	1
Icing Sugar ..	..	..	..	..	1
Potato Crisp ..	..	..	..	..	1
Honey ..	..	..	..	..	25
Noodles ..	..	..	..	..	32
Sesame Oil ..	..	..	..	..	24
Vinegar ..	..	..	..	..	8
Syrup ..	..	..	..	..	20
Preserved Fruits	..	..	..	..	39
Preserved Cuttlefish	..	..	..	..	1
Ghee ..	..	..	..	..	5
Artificial Vinegar	..	..	..	..	3
Whisky ..	..	..	..	..	8
Brandy ..	..	..	..	..	8
Beer ..	..	..	..	..	8
Stout ..	..	..	..	..	15
Fish Gravy ..	..	..	..	..	2
Kaya ..	..	..	..	..	6
Jam ..	..	..	..	..	10
Popsicles ..	..	..	..	..	1
Coloured Sweets	..	..	..	..	24
Cheese ..	..	..	..	..	12
Coffee Powder (80%)	..	..	..	..	1
Herbs ..	..	..	..	..	2
Herbs Mixture ..	..	..	..	..	6
Coloured Sugar	..	..	..	..	1
Total ..					999

Total samples taken 999. Satisfactory 799. Unsatisfactory 182. Not yet analysed 18 carried forward to 1966.

FOODS AND DRUGS SAMPLES—*continued*

<i>Type of Article</i>					<i>Number of Samples Taken</i>
Formal Drugs Samples:					
Tincture of Iodine	..	..	..	..	9
Tincture of Benzoin	..	..	..	..	8
Chlore—Methylamino Phenyl Benzo-Diazapoxide				..	1
Mascara	..	..	..	..	4
Absorbent Cotton Wool	..	..	..	..	1
Vitamin B1 Tablets	..	..	..	..	16
Vitamin C Tablets	..	..	..	..	9
BP/BPC Tablets	..	..	..	..	14
Antacid Tablets	..	..	..	..	2
Methaninodizepoxide	..	..	..	..	1
Medicated Oil	..	..	..	..	18
Vitamin A Capsules	..	..	..	..	9
Fever Powder	..	..	..	..	3
Alivit with B12 Injection	..	..	..	..	1
Asthma Pills	..	..	..	..	12
Total					108

Total samples taken 108. Satisfactory 88. Unsatisfactory 20.

Informal Food Samples (To Analyst):

Sesame Oil	..	..	..	..	3
Sugar	..	..	..	..	3
Star Aniseed	..	..	..	..	35
Coloured Skimmed Milk Powder				..	16
Carbonated Drink	..	..	..	..	16
Pork Sausage	..	..	..	..	2
Egg Noodle with Mixed Pork				..	1
Soya Bean Cake	..	..	..	..	1
Jelly Crystal	..	..	..	..	1
Coloured Sugar	..	..	..	..	2
Potato Crisp	..	..	..	..	3
Coffee Mixture	..	..	..	..	1
Concentrate Lemon	..	..	..	..	1
Concentrate Orange	..	..	..	..	1
Vermicelli	..	..	..	..	12
Apples	..	..	..	..	1
Coloured Buttermilk Powder				..	32
Coloured Whey Powder	..	..	..	..	3
Fish Balls	..	..	..	..	24
Coloured Essence	..	..	..	..	1
Colouring Matter	..	..	..	..	3
Syrup/Cordial	..	..	..	..	24
Vegetable Gourmet Powder				..	1
Water	..	..	..	..	2
Sugar Seasoning Monosodium Glutamate				..	1
Turnips	..	..	..	..	1
Herrings in Tomato	..	..	..	..	1
Canned Carrots	..	..	..	..	1
Marmalade	..	..	..	..	1
Tea Dust	..	..	..	..	11
Rice Porridge	..	..	..	..	12
Cream	..	..	..	..	2
Carried forward					219

FOODS AND DRUGS SAMPLES—*continued*

<i>Type of Article</i>	<i>Number of Samples Taken</i>
<i>Brought forward</i> ..	219
<i>Informal Food Samples (To Analyst)—continued.</i>	
Chilly Sauce	1
Bread Improver	1
Preserved Fruits	15
Preserved Cuttlefish	1
Pork Luncheon Meat	1
Bread	1
Sweets	2
Brandy	2
Coffee Powder	1
Artificial Vinegar	4
Curry Powder	22
Instant Drink Tablets	1
Java Sambal	1
Tomato Catsup	1
Fruit Juice Tablets	1
Syrup with Vitamin C	2
Wheat Flour	1
Coloured Buns	1
Tonic Food	3
S/B Milk Powder	2
Poppy Seeds	1
Corned Beef	1
Chicken Essence	5
Non-carbonated Drink	1
Concentrated Essence	1
Blackcurrant Juice with Vitamin C	1
Total ..	293

Total samples taken 293. Satisfactory 259. Unsatisfactory 25. Not yet analysed 9—carried forward to 1966.

Informal Drugs Samples (To Analyst):

Hair Dye	3
Medicated Oil	40
Aerosol Hairspray	1
Mascara	3
Absorbent cottowool B.P.C.	9
Antacid Tablets	10
Proprietary Drugs	8
BP/BPC Drugs	5
Vitamin Tablets	2
Sulfa Capsules	3
Antibiotic Capsules	4
Vitamin B1 Tablets	1
Alinamin	1
Baby Talcum Powder	1
Asthma Pills	1
Asthma Powder	1
Brown Powder	1
Tonic Food	1
Total ..	95

Total samples taken 95. Satisfactory 54. Unsatisfactory 40. Not yet analysed 1, carried forward to 1966.

FOODS AND DRUGS SAMPLES—*continued*

<i>Type of Article</i>					<i>Number of Samples Taken</i>
Food Contamination—Informal Samples (To Bacteriologist):					
Pork Sausage .. .. .	..	..	..	..	2
Non-carbonated Drink .. .. .	..	..	..	..	6
Sugar .. .. .	..	..	..	..	4
Condensed Milk .. .. .	..	..	..	..	1
Herrings in Tomato .. .. .	..	..	..	..	1
Preserved Fruits .. .. .	..	..	..	..	1
Pork Luncheon Meat .. .. .	..	..	..	..	6
Cooked Ham .. .. .	..	..	..	..	6
Pork Sausages in Brine .. .. .	..	..	..	..	2
Pig's Entrails Sausages .. .. .	..	..	..	..	2
Baked Bean with Pork Sausage .. .. .	..	..	..	..	1
Vegetable Soup .. .. .	..	..	..	..	2
Cream of Mushroom Soup .. .. .	..	..	..	..	1
Chicken Noodle Soup .. .. .	..	..	..	..	1
Onion Soup .. .. .	..	..	..	..	1
Minestrone Soup .. .. .	..	..	..	..	1
Mooncakes .. .. .	..	..	..	..	1
Cream of Chicken Soup .. .. .	..	..	..	..	1
Corned Beef .. .. .	..	..	..	..	1
Total ..					41

Total samples taken 41. Satisfactory 34. Unsatisfactory 6. Not yet analysed 1, carried forward to 1966.

Informal Food Samples (To Botanist):					
Bekunis Tea .. .. .	..	..	..	..	1
Seeds (spices) .. .. .	..	..	..	..	1
Oak Gall (for identification only) .. .. .	..	..	..	..	1
Total ..					3

Total samples taken 3. Satisfactory 2. For identification purpose only 1.

Food Poisoning (To Toxicologist):					
Well Water .. .. .	..	..	..	..	1
Total ..					1

Total sample taken 1. Satisfactory 1.

FOOD AND DRUGS SAMPLES—*continued*

<i>Type of Article</i>					<i>Number of Samples Taken</i>
Food Poisoning—Informal Food Samples (To Bacteriologist):					
Condensed Milk	..	..	..	..	3
Wild Mushrooms	..	..	..	..	1
Chilly Sauce	..	..	..	..	1
Fried Eggs	..	..	..	..	1
Boiled Pork	..	..	..	..	1
Boiled Sotong and Prawns	..	..	..	..	1
Fried Vermicelli and Noodles	..	..	..	..	1
Beef	..	..	..	..	1
Mutton	..	..	..	..	1
Pork	..	..	..	..	1
Water	..	..	..	..	1
Well Water	..	..	..	..	1
Throat Swabs	..	..	..	..	2
Stools	..	..	..	..	2
Saffron Powder	..	..	..	..	1
Fruit Salad	..	..	..	..	1
Biscuit and Flour	..	..	..	..	1
Ham	..	..	..	..	1
Spaghetti	..	..	..	..	1
Pickled Carrots	..	..	..	..	1
Green Pea Paste	..	..	..	..	1
Malay Cake	..	..	..	..	1
Total					26

Total samples taken 26. Satisfactory 22. Unsatisfactory 4.

Summary of samples taken during the year 1965 is as follows:—

Samples of Food taken for Chemical Analysis/Bacteriological Examination					1,294
Samples of Drugs taken for Chemical Analysis					203
Samples taken re Food Poisoning					27
Samples taken re Food Contamination					41
Samples taken for identification purpose only					1
Total number of samples taken					1,566
No. of samples found satisfactory					1,259
No. of samples found unsatisfactory					277
No. of samples not yet analysed					29
No. of samples for identification purpose only					1
Total					1,566

Food Poisoning:

The incidence of food poisoning in 1965 is as follows:

No. of confirmed cases	..	..	..	..	12
No. of persons affected	..	..	..	..	133

Causes:

Due to consumption of wild mushrooms	..	..	..	..	2
Due to positive carriers	..	..	..	..	1
Due to improper handling, preparation and storage of the suspected food	..	..	..	..	8
Cause unknown	..	..	..	..	1
Total					12

OFFENCES AND PROSECUTIONS

Summonses Applied for During the Year 1965

(a) Adulterated Food	..	..	200
(b) Adulterated Drugs	..	..	22
		Total	222

Return of summon cases mentioned in court during the year 1965 and also including summon cases brought forward for 1964.

No. of Summons Applied	..	..	222
No. of Summons Withdrawn (not served)	..	..	6
No. of Summons Withdrawn (in court)	..	..	50
No. of Cases Prosecuted	..	..	168
No. of Cases Convicted	..	..	159
No. of Cases Acquitted	..	..	9
Amount Fined	..	..	\$6,145

No. of summons cases-claimed trial and fixed for hearing in 1966—6 cases.

No. of summons cases warrant of arrest applied for—1.

The following articles were forfeited by Court Order under section 14 (1) of the Sale of Food and Drugs Ordinance (Chapter 148):

- (1) Mascara containing lead — 2 boxes and 4 tins.
- (2) Multi-Vitamin Syrup — 15 bottles.

Unsound food destroyed comprising of various assorted tinned and other provisions — 125,737 lb. $9\frac{3}{4}$ ozs.

Unsound drugs destroyed comprising of 9,478 bottles and 12,500 packets of ford and venoid pills — 588 lb.

*Ice-Cream**(a) Licensed Ice-Cream Factories, Confectioneries and Distribution Centres*

At the end of 1965, the number of licensed premises were as follows:

Ice-cream factories	..	..	..	8
Ice-cream distribution centres	..	..	..	22
Confectioneries	..	..	..	2

Ice-Cream Factory.—During the year, one ice-cream factory ceased business. Two new applications for ice-cream factory were received and dealt with, of which one was withdrawn while the other was approved, subject to the compliance of our health requirements.

Distribution Centres.—Twelve new applications for ice-cream distribution centres were received. Eleven were approved and one was rejected because the premises were considered too small for the trade. Two ice-cream distribution centres ceased business during the year.

(b) Sampling

Total number of ice-cream samples taken for bacteriological examination	334
Total number of popsicles samples taken for bacteriological examination	292
Total number of sterilised milk samples taken for bacteriological examination	4
Total ..	<hr/> 630 <hr/>

RESULTS OF SAMPLES TAKEN

	<i>Ice-Cream</i>	<i>Popsicles</i>	<i>Sterilised Milk</i>
No. of satisfactory bacteriological samples	293	275	4
No. of unsatisfactory bacteriological samples ..	41	17	—

MALARIA AND MOSQUITO CONTROL

Anti-malaria and anti-mosquito measures in the City are under the Health Officer (A.M.D.) while in the Rural Districts are under the District Health Officer.

The main method used in anti-larvae against two main vectors, *A. sundaicus* and *A. maculatus*. The measures include subsoil drains, ditching, weekly anti-malarial oiling and the use of insecticides.

Construction of permanent anti-malarial works is carried out by the Public Health Engineering Unit.

The department maintains close liaison with the Armed Forces, Railway Administration, Port of Singapore Authority and the Malaria Advisory Board of Malaya.

City.—99 cases of malaria within the City were reported during the year. All these cases were thoroughly investigated by the Quarantine and Epidemiology Branch and none could be attributed to have been contracted within the City.

Bukit Panjang/Jurong.—Two cases of malaria were reported in the Bukit Panjang/Jurong District. These were found to be imported cases.

Pulau Ubin.—Two cases of malaria occurred in April 1965 in Sin Kang Village of Pulau Ubin. They were detected in the Middleton Hospital where they had previously been admitted suffering from Typhoid.

Anti-malaria surveys had been carried out in the surrounding area of the uncontrolled village (Sin Kang) and findings confirmed breeding of *A. sundaicus* in the area. Since the two cases appeared to be “local”, the village was put under A.M. control with effect from 15th May, 1965, and weekly oiling started. No new cases of malaria have been reported so far.

Pulau Tekong.—Thirteen cases of malaria were reported in various parts of Pulau Tekong — all controlled areas.

Residual spraying with Dieldrex 15 of all occupied houses (56) in the three kampongs had been carried out.

Several mosquito larval surveys had been carried out in the three affected kampongs but no malaria vectors had been found breeding. However, one breeding place of *A. maculatus* had been found in an uncontrolled area (a drain) of a controlled kampong (Kampong Senyongkong) and this had now been included in the weekly oiling area.

1,000 CONSECUTIVE COLLECTIONS FROM COMMON BREEDING PLACES
IN THE CITY

<i>Breeding Places</i>	<i>A. macu- latus</i>	<i>A. kochi</i>	<i>A. vagus</i>	<i>A. hyr- canus</i>	<i>Culex</i>	<i>Stegomyia</i>	<i>Total</i>
Public roadside concrete drains	—	1	1	—	322	—	324
Private concrete drains	—	2	2	—	65	4	73
Sullage concrete drains	—	—	2	—	45	3	50
Backlane concrete drains	—	—	—	—	28	—	28
Housing and Development Board concrete drains	—	1	—	—	7	—	8
Canals	—	—	—	—	5	—	5
Cesspits	—	—	—	—	5	—	5
Septic Tanks	—	—	—	—	14	2	16
Edges of Reservoir border	—	—	—	13	—	—	13
Fish ponds	—	—	—	—	3	—	3
Concrete pits	—	1	—	1	4	3	9
Concrete wells	—	—	—	—	5	—	5
Concrete tanks	—	2	—	—	10	3	15
Water cork pits	—	—	—	—	2	1	3
Beats	—	—	—	—	9	3	12
Silt traps	—	—	—	—	3	—	3
Building excavations	—	4	6	1	46	3	60
Seepages	5	4	1	—	3	—	13
Earth drains	—	7	1	—	42	—	50
Lorry tracks	—	4	1	—	9	—	14
Vegetable ponds	—	3	1	20	17	—	41
Grassy pools	—	4	—	1	28	—	33
Earth wells	—	7	—	1	6	—	14
Stagnant water	—	15	13	1	66	—	95
Water bearing receptacles (tins, jars, etc.)	—	—	—	—	20	74	94
Sewerage Man-holes	—	—	—	—	13	—	13
Swimming pool	—	—	—	—	1	—	1
Total	5	55	28	38	778	96	1,000

14,660 collections of mosquito larvae were brought to the laboratory for identification. 19 of them contained larvae of *A. maculatus*, 11 contained larvae of *A. letifer* and 1,244 contained other anophelines. The balance were *Culex* and *Aedes*.

The following shows the types of breeding places and the species of anophelines found in them:—

<i>Types of Breeding Places</i>		<i>A. maculatus</i>	<i>A. letifer</i>	<i>A. karwari</i>	<i>A. barbirostris</i>	<i>A. kochi</i>	<i>A. hyrcanus</i>	<i>A. vagus</i>
Seepages	..	9	—	—	—	13	15	4
Earth wells	..	4	—	—	—	71	21	16
Concrete wells	..	5	—	—	—	7	4	—
Reservoir cracks	..	1	11	2	8	1	132	—
Stagnant water	..	—	—	—	—	100	18	75
Lorry tracks	..	—	—	—	—	26	1	12
Ponds	..	—	—	—	—	74	287	67
Receptacles	..	—	—	—	—	9	2	2
Grassy pools	..	—	—	—	—	49	10	29
Roadside concrete drains	..	—	—	—	—	28	9	10
Earth drains	..	—	—	—	—	29	11	8
Swimming pool	..	—	—	—	—	1	—	1
Concrete tanks	..	—	—	—	—	10	6	1
Building excavations	..	—	—	—	—	25	4	25
Private concrete drains	..	—	—	—	—	9	4	6
Boats	..	—	—	—	—	1	—	1
Total	..	19	11	2	8	453	524	257

Notices.—A total of 164 notices under the Destruction of Mosquitoes Ordinance were served in 1965. The majority of these were served on owners of lands or contractors who were responsible for building excavations in which mosquitoes were found breeding.

<i>District</i>					<i>No. of Notices Served</i>
City	..	..	..	..	29
Katong	..	..	..	..	32
Serangoon	..	..	..	..	67
Bukit Panjang/Jurong	..	..	..	..	36
Southern Islands	..	..	..	..	—
Total	..	..	..	..	164

Anti-Mosquito Control.—Throughout the year, anti-mosquito control was maintained through: (a) permanent measures, (b) non-permanent measures.

(a) *Permanent Measures.*—These include:

- (i) Construction of permanent concrete drains, subsoil drains and earth drains. With the construction of subsoil drains, a number of anti-malarial works were constructed providing the population in these areas a safe water supply.

(ii) Maintenance and repair of existing anti-malarial drains. This was done in both Rural and City Areas.

(iii) Control of tidal areas. This consists of filling of extensive tidal swamp areas by controlled tipping. Large areas in Kolam Ayer and in the Kallang Basin are continuing to be filled. Where malarial vectors have been discovered in fish and prawn ponds, owners have been advised to empty their ponds daily with the tide.

(b) *Non-Permanent Measures*.—These are mainly larvicidal measures. During the year under review a total of 349,817 gallons of anti-malarial oil was used.

AMOUNT OF ANTI-MALARIAL OIL USED IN GALLONS

City	113,845
Katong	89,990
Serangoon	58,800
Bukit Panjang/Jurong	53,690
Southern Islands	8,492
Jurong Industrial Estate	25,000
Total ..	<u>349,817</u>

SPECIAL EVENTS IN 1965

(a) *Jurong Industrial Estate*.—The industrial complex continued to develop. About 3,000 acres have been developed and are served by roads, rail and harbour facilities. Portable water supply is available. Sewerage works are still in progress. Industrial water treatment plant is in the course of construction.

A total of 4,260 units of shops and dwelling houses are completed by the Housing and Development Board. One school building has been completed, and two markets are under construction. There are three food establishments, a post office and two banks serving the housing estates.

There are 50 factories in production, 17 more are under construction. Most factories are providing canteens except few smaller ones in the Light Industries Zone. Economic Development Board may be proposing a common public canteen and restaurant in this neighbourhood.

Out of 16 trade effluent samples submitted to the Chief Chemist for analysis only two have been satisfactory and complied with the standard.

(b) *Jurong Railway Line*.—The Railway Line has been completed and in use. The construction caused problems of ideal mosquito breeding places along the route. Hill cutting and earth movement caused new seepages. The swampy areas along West Coast Road was filled up to lay the rails and the tidal influence was distributed by constructing high culverts. Heavy entomorpha appeared and ideal breeding places were created.

The matter was dealt with by extensive measures which were only partially effective.

(c) *Land Reclamation by Economic Development Board.*—Deviation of Sungei Ulu Pandan, Reclamation of West Coast Areas, Tanjong Penjuru, and Kranji Areas created new ideal vector breeding places and the department was caught unaware as no information was available earlier. Finally the problems was partly resolved with the recruitment of extra labour force and extension of oiling areas. The earthworks in many areas are providing new opportunities for diseases bearing vectors.

(d) *Reorganisation of Cleansing Services in Katong District.*—In the month of August, Mr. A. Pereira, Assistant Superintendent, Public Cleansing Departmental (City), was instructed by the Senior Health Officer (Environmental Health) to study and reorganise the cleansing services in Katong with particular reference to the practical aspects. He was therefore instructed to reorganise these services on the pattern of the City Cleansing services. Initially, he had to study the existing organisation which was found to be very inefficient due to a number of causes. Mr. B. D. Raj, Cleansing Inspector, was transferred from the City to this Department to assist Mr. Pereira in carrying out sweeping changes. He brought certain reform on labour discipline enforced punctual attendances for both staff and labour, regular refuse collection by wagons and also reduced the overtime work for wagons without hampering the cleansing service. As a result of the abovementioned changes a considerable improvement in the cleansing services in Katong was observed. The number of public complaints on irregular collection of refuse and choked drains was reduced considerably. Further improvements may be expected as discipline is tightened up and supervision is improved. The reorganisaton of the Serangoon and Bukit Panjang/Jurong areas will follow soon.

Chapter Eight

THE QUARANTINE AND EPIDEMIOLOGY BRANCH

THE Quarantine and Epidemiology Branch, under a Senior Health Officer, comprises:

- I. The Quarantine Section which is responsible for the control of quarantineable diseases by checking international traffic and comprises of:
 - (1) The Marine Port Health Service;
 - (2) The Airport Health Service;
 - (3) The Quarantine Stations; and
 - (4) The Vaccination Centre.
- II. The Epidemiology Section which studies and controls minor infectious disease conditions locally, establishes non-receptive conditions for Yellow Fever around the Paya Lebar International Airport and maintains a regular check on rodent health in the Port Area to discover the first signs of plague if and when introduced. It comprises of:
 - (1) The Plague Prevention Unit;
 - (2) Infectious Disease Investigation and Epidemiological Studies Unit;
 - (3) The Floating Dispensaries (Travelling Dispensary Service to the Islands); and
 - (4) The Aedes Control and Anti-Malarial Surveillance Unit which runs the Central Anti-Malarial Laboratory and also assists in establishing New Projects.

THE QUARANTINE SECTION

(1) *The Marine Port Health Service*

Round-the-clock clearance of ships is being maintained.

Radiomedical advice to ships at sea involved 52 cases this year. This is also a round-the-clock service.

This sub-section dealt with the following:

			<i>Number of Vessels</i>			<i>Passengers and Crews</i>		
			1963	1964	1965	1963	1964	1965
Foreign going vessels	..	..	3,024	2,598	2,473	177,553	132,171	118,533
Small craft	..	..	15,730	12,652	—	63,740	35,474	—

The absence of small craft is due to a ban placed on them since August 1964 following intensified confrontation by Indonesia.

Two water-boats and 70 bum-boats were inspected. Of 377 ships examined for rodent life, 50 were required to be fumigated and certificates of deratisation or exemption were issued accordingly.

A new Port Health launch, named *Sumpit*, was put into operation as from 6th December, 1965. Other Port Health launches are the *Sudong* (2nd May, 1958), *Subur* (April 1962) and *Ellis Raikes* (17th February, 1949).

Jurong Wharf has been completed in November 1965, but Port Health facilities have not been required there this year.

(2) *The Airport Health Service*

The Paya Lebar International Airport is a sanitary airport under the terms of Article 19 of the International Sanitary Regulations. During the year, 20 airlines availed themselves of the facilities provided at the Airport. There were 4,926 scheduled aircraft arrivals on International Flights and 4,920 departures during the year. A total of 854 non-scheduled aircraft arrived on international flights. The new airlines which started operating during the year are Air Vietnam, Lufthansa (German Airlines) and Philippine Airlines. B.U.A. and B.E.I.A. ran trooping services.

Round-the-clock service for the clearance of aircraft and passengers from "infected" airports has been provided by five senior Hospital Assistants. As from 1st September, 1965, health clearance has been extended to all international flights with the assistance of an extra Hospital Assistant.

Four private operators, S.V.O.C., Shell, Caltex and Pan American Indonesian Oil Company also availed themselves of the facilities.

In spite of separation, the Airport Health Officers at Penang and Kuala Lumpur continue to issue Certificates of Clearance after they have cleared aircrafts on international flights, bound for Singapore from Malaya, and the Airport Health Officer in Singapore does the same in return.

The volume of traffic and the number of passengers handled by the Airport Health Office over the last six years are given in the table below:

			1961	1962	1963	1964	1965
Aircraft cleared	..	..	1,641	1,917	3,223	3,057	4,380
Passengers and crew cleared	..	..	91,343	110,852	192,864	156,645	174,898
Transit Passengers not examined	..	..	—	—	—	47,093*	95,065
Passengers isolated	..	..	—	—	—	—	—
Passengers under surveillance	..	..	354	670	743	680	408

*This figure relates to unexamined transit passengers from infected ports only.

There has been a drop in the number of passengers and crews cleared, from 1964 onwards. This is because the Transit Lounge facilities, now available in the new Airport Terminal Building, has eliminated the need for the clearance of a large number of transit passengers (95,065 this year). There has also been a fairly substantial drop in the number of passengers arriving without valid vaccination certificates.

The general sanitation of the Airport has remained satisfactory throughout the year. One complaint of fly nuisance in November was traced to the use of wet sludge, which has now been substituted by dry sludge by the Director of Civil Aviation.

One complaint of mosquito nuisance in September was traced to breeding of mosquitoes (culex) in collections of stagnant water at the bottom of the trench for flower pots in the gallery floor of the public concourse of the Airport Passenger Terminal Building. On investigation it was established that larvae, found breeding in the D.C.A. Nursery, had attached themselves to roots at the bottom of flower pots and had thus been brought to the Terminal Building near the end of their larval cycle so that mosquitoes emerged even before the weekly checking could detect them. Thenceforth, Health request not to water pots *in situ* in the gallery floor trench is enforced, and the trench floor is kept dry. This is the first time that mosquitoes and breeding had *ever* been found within the Perimeter Area (or Free Zone).

The lack of gradient or drainage for flow of water had been pointed out but no structural reconstruction was done. This necessitated weekly surveillance.

Two consecutive bacteriological examinations of finger streaks of food handlers in the Malaysian Airways Ltd. Catering Unit showed considerable improvement had been obtained with the use of an anti-bacterial skin cleanser.

The examination of toilet wastes from Aircraft closets continued.
Of 465 samples examined, only 200 were found negative.

(3) *The Quarantine Station*

The table below shows the number of passengers quarantined at St. John's Island for the past six years:

	<i>Year</i>	<i>Total</i>	<i>Chinese</i>	<i>Indians</i>	<i>Malays</i>	<i>Others</i>
1961	..	10,615	5,496	4,754	302	63
1962	..	6,625	3,427	3,126	—	36
1963	..	4,228	832	3,224	155	17
1964	..	4,302	948	3,337	—	17
1965	..	4,103	637	3,464	—	2

For the last three years, the total has remained fairly constant. Quarantine measures are limited to re-vaccination of all arrivals and observation for 48 hours.

There was no local outbreak of any quarantineable disease.

(4) *The Government Vaccination Centre*

This Centre affords free vaccination service to the public and travellers. International vaccination certificates are also available here.

The following is a summary of the work done at this Centre:

SUMMARY OF WORK DONE AT THE GOVERNMENT VACCINATION CENTRE 1963 TO 1965

		1963	1964	1965
Smallpox vaccinations	..	20,323	22,583	21,842
Cholera vaccinations	..	173,146	33,679	27,398
TAB vaccinations O (Typhoid Paratyphoid A and L)	..	75	474	1,116
Total	..	193,544	56,736	50,356

THE EPIDEMIOLOGY SECTION

(1) *The Plague Prevention Unit*

Rats trapped along the Singapore River and in the Harbour Board Area are subject to post-mortem examination and, if suspicious, bacteriological investigation. Rats obtained from fumigated ships are also subjected to post-mortem examination. A total of 2,047 rats were examined during the year and none of them was infected with plague.

(2) *Infectious Disease Investigation and Epidemiological Studies Unit*

Notifiable infectious diseases are divided into two broad categories under the Quarantine and Prevention of Disease Ordinance —

- (a) the dangerous infectious diseases, which are quarantineable, and include smallpox, plague, cholera, epidemic or louse-borne typhus and yellow fever;
- (b) the minor infectious diseases which include anthrax, endemic typhus, cerebro spinal fever, acute poliomyelitis, chicken-pox, diphtheria, enteric fever, erysipelas, leprosy, puerperal fever, scarlet fever and tuberculosis.

Table 23 shows the incidence of the main notifiable diseases from 1963 to 1965.

TABLE 23

	1963			1964			1965		
	City	Rural	Total	City	Rural	Total	City	Rural	Total
Cholera El Tor ..	15	12	27	16	8	24	..	..	..
Typhoid ..	123	66	189	76	53	129	165†	115	280‡
Diphtheria ..	312	88	400	166	40	206	166	64	230
Chickenpox ..	1,746	765	2,511	853	417	1,270	2,540†	1,242	3,782
Poliomyelitis ..	50	18	68	11	6	17	25	15	40
Cerebro Spinal Fever ..	..	..	..	..	..	..	..	..	..
Leprosy ..	75	33	108	89	47	136	166	76	242
Typhus* ..	1	3	4	..	1	1	2	2	4
Pueperal Fever ..	15	3	18	85	29	114	321	326	647

* Under the heading, typhus are included Tsutsugumushi or Scrub Typhus of Malaya (mite borne) and flea borne Urban Type Tropical Typhus. Louse-borne typhus has not been seen in Singapore.

† Includes 12 imported cases.

‡ Includes one case of paratyphoid B, and one of paratyphoid C.

The figures for tuberculosis are not included in this report as tuberculosis (since 1959) is notified directly to the Assistant Director of Medical Services (Tuberculosis) at Tan Tock Seng Hospital.

There has been no case of cholera during 1965. The last cases of cholera, smallpox and plague occurred in 1964, 1959 and 1933 respectively. Other quarantineable diseases have not been known to have occurred locally.

Diphtheria.—The morbidity figure is higher than last year, but the number of “throat diphtheria” cases has decreased. The more intensive search for nasal and aural cases has been responsible for the total increase. This is demonstrated by the significant drop in the mortality figure from 17 in 1964 to 6 in 1965.

This is the fourth year since the operation of compulsory vaccination.

The Urban/Rural distribution in 1965 is 166 : 64, as compared to 166 : 40 in 1964. The table below gives the monthly notifications of diphtheria in 1965.

Table 24 showing the distribution of diphtheria by month and locality, 1965.

TABLE 24

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	18	10	15	12	13	17	18	10	12	13	17	11	166
Rural ..	10	4	4	4	2	3	5	3	11	9	4	5	64
Total ..	28	14	19	16	15	20	23	13	23	22	21	16	230

Table 25 shows the comparative monthly incidence of diphtheria for 1963, 1964 and 1965.

TABLE 25

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1963 ..	36	35	32	23	19	31	53	30	27	47	38	29	400
1964 ..	27	18	16	20	9	11	15	21	9	18	22	20	206
1965 ..	28	14	19	16	15	20	23	13	23	22	21	16	230

Table 26 shows diphtheria notifications and deaths for the last ten years.

TABLE 26

Year	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Notifications ..	552	712	548	519	642	587	353	400	206	230
Deaths ..	47	58	34	23	32	27	13	24	17	6
Mortality Rate	8.51	8.14	6.20	4.43	4.98	4.60	3.68	6.00	8.25	2.61

Poliomyelitis.—The incidence has more than doubled this year, and one child who had actually had the prescribed three doses of Sabin Vaccine also fell victim to the disease. But mortality remains at zero for the second year in sequence.

Table 27 shows the monthly incidence of poliomyelitis for 1965.

TABLE 27

Poliomyelitis 1965	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
City ..	2*	..	1	3†	..	5	7	3	1	..	..	3	25‡
Rural ..	1	..	..	3	..	1	3	3	3	1	..	..	15
Total ..	3*	..	1	6†	..	6	10	6	4	1	..	3	40‡

* Imported cases from Johore and Malacca.

† One imported case from Johore.

‡ Three imported cases.

Table 28 shows the incidence of notified and confirmed cases of poliomyelitis by age, sex and ethnic group in Singapore in 1965.

TABLE 28

Age	EUROPEANS			EURASIANS			CHINESE			MALAYS			INDIANS			OTHERS			TOTAL			
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	
Under 1 year	2	2	4	1	..	1	..	..	..	1	..	1	4	2	6	..	..	..
Over 1 year	7	4	11	2	..	2	1	3	4	..	..	..	10	7	17	..	..	..
Over 2 years	4	1	5	..	..	..	..	..	..	..	..	..	4	1	5	..	..	..
Over 3 years	3	2	5	1	..	1	..	..	..	1	..	1	5	2	7	..	..	..
Over 4 years	1	1	2	..	..	..	..	..	..	..	..	..	1	1	2	..	..	..
Over 5 years
Over 6 years	2	..	2	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..
Over 7 years
Over 8 years
Over 9 years
Over 10 years
Over 15 years	1	..	1	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..
Total	20	10	30	4	..	4	1	3	4	2	..	2	27	13	40	..	..	..

Table 29 shows the incidence of poliomyelitis over the past five years.

TABLE 29

Year	1961	1962	1963	1964	1965
Cases ..	57	14	68	17*	40†

*One imported case.
†Three imported cases.

TYPHOID FEVER

The Chung Cheng High School Epidemic.—The main contribution to the large increase in typhoid cases in 1965 was from the outbreak in Chung Cheng High School, Goodman Road, during March and April. There were 99 cases in this outbreak including two deaths. For details of this outbreak, please see Chapter Nine.

Minor localisations in Duxton Road (12 cases), Jalan Minyak (9 cases) and Jalan Eunós (8 cases) Areas.—At the end of the Chung Cheng High School outbreak, it was noticed that there were three areas with minor concentrations of typhoid cases. The food hawkers operating in Duxton Road and Jalan Minyak areas were listed, compulsorily examined and voluntarily inoculated in May, and the same action repeated in Jalan Eunós area in August and September. The incidence of typhoid in these areas diminished considerably on completion of the exercise even though the single carrier discovered was not thought to have been responsible for infecting any case: he was not a hawker at that time but came forward to be examined as he hoped to be a hawker later on and felt that our action was a preliminary to hawker registration.

Table 30 shows the results of the examinations of food hawkers in the three areas, mentioned above.

TABLE 30

Areas		Hawkers Examined	Hawkers Inoculated Against Typhoid	Carriers Isolated
Duxton Road	..	66	61	—
Jalan Minyak	..	86	75	1
Jalan Eunós	..	353	350	—
Total	..	505	486	1

Table 31 gives the monthly incidence of typhoid in Singapore in 1965.

TABLE 31

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
City ..	8	10	27	70	12	11	4	5	3	2	3	8	163
Rural ..	1	5	19	43	22	6	6	1	2	3	4	3	115
Total ..	9	15	46	113	34	17	10	6	5	5	7	11	278

Leprosy.—Table 32 shows the incidence of leprosy in Singapore for 1951, 1960, 1961, 1962, 1963, 1964 and 1965.

TABLE 32

	<i>Year</i>		<i>City</i>	<i>Rural</i>	<i>Total</i>
1951	142	79	221
1960	119	27	146
1961	62	39	101
1962	69	43	112
1963	75	33	108
1964	89	47	136
1965	166	76	242

Puerperal Fever.—There is no reason to believe that the great increase in notified cases of puerperal fever is due to an increased incidence of the disease. The vast majority of the notified cases were extra-genital. Under-notification and non-notification is being detected and corrected.

Despite the increase in notifications from 114 in 1964 to 647 in 1965, the number of deaths due to puerperal fever has fallen from three in 1964 to only one in 1965.

Chickenpox.—Although the increase in notification from 1,270 in 1964 to 3,782 in 1965 is thought to be due to better notification, several medical practitioners have commented that they were seeing more cases this year.

There is no reason to believe that any one race is more susceptible than another to chickenpox, but the notified cases of Indians is 1,424 while only 1,327 cases of Chinese were notified even though the Chinese form over 75 per cent of the population of Singapore. This is strongly suggestive evidence of under-notification: it is possible that Chinese consider the disease so insignificant that most of them do not seek medical attention for it.

General Remarks.—Early this year, a more positive approach has been implemented in the investigation of infectious diseases with a view to prevent the occurrence of other preventable infectious diseases in homes where any one infectious disease has occurred: a complete immunisation history (instead of the immunisation history related only to the disease under investigation) is obtained for cases and contacts, and a follow-up is instituted to make sure that each family has visited the Maternal and Child Health Clinic at least once. This often entails an extra visit or two to each home, and therefore extra work, but it is hoped that it will eliminate the need for a second notification of infectious disease from the same home, at least with regard to those for which immunisation protection is available, thereby reaping a harvest of reduced morbidity and mortality hereafter.

The increased number of cases this year placed a strain on the staff. Despite the fact that 2,216 chickenpox cases, which occurred during the typhoid outbreak, were not investigated, 161 more chickenpox cases and their contacts have to be followed up in the coming year.

(3) *The Floating Dispensaries*

Two launches — *Tengku Hussain* and *Seraya* — supply a travelling dispensary service to the islands. Each launch follows a programme of visits, and has a Senior Hospital Assistant in charge who treats minor ailments and refers more serious cases to hospitals in the “mainland” (Singapore Island). He also serves to discover cases of infectious diseases in islands and initiates appropriate action. A total of 7,951 cases were attended to. Of these 3,914 were in St. John’s Island where there is a resident Hospital Assistant and 4,037 were from the other islands.

(4) *The Aedes Control and the Anti-Malarial Surveillance Unit*

This Unit is responsible for:

- (a) the control of mosquitoes (specially *Aedes*) in the Paya Lebar International Airport;
- (b) Malaria Surveillance on an island-wide basis; and
- (c) check for mosquito breeding in Rural oiling areas.

(a) *Airport Mosquito Control*.—The Perimeter Area*1 and the Protection Area*2 are kept free of all mosquitoes, adult and larval forms, with special attention to possible vectors of Yellow Fever. To prevent larval breeding within the Protection Area, a further 400 meters is sanitated against mosquitoes.

The *Aedes* Indices achieved in 1965 are shown in Table 33, a result of surveys covering an average of 1,245 houses each quarter of the year. Fifty-one weekly surveys were carried out to cover 130 check points in the area.

TABLE 33

Quarter	Number of houses checked	NUMBER OF COLLECTIONS MADE				Index (%)	
		A (S) Aegypti	A (S) Albo- pictus	A (A) Obtur- bacus	Culex	A (S) Aegypti	A (S) Albo- pictus
1st	1,230	Nil	15	Nil	8	Nil	1.2
2nd	1,250	Nil	17	Nil	7	Nil	1.4
3rd	1,250	Nil	16	1	9	Nil	1.3
4th	1,248	Nil	18	Nil	11	Nil	1.4

*1 The Perimeter Area is the area containing Airport Buildings and Aircraft Parking Spaces, including hangers.

*2 The Protection Area extends 400 meters outside the Perimeter Area.

In September 1965, Culicine breeding occurred in the Department of Civil Aviation Plant Nursery (near the outer boundary of the Protection Area) and larvae were taken, attached to flower pots, to the flower box in the first floor of the Public Concourse of the Passenger Terminal Building of the Airport.

In the last quarter, two more instances of breeding occurred in the Protection Area—one in the sewerage excavations and the other in a domestic receptacle.

(b) *Malaria Surveillance*.—201 cases were reported during the year. Of these, 73 required home investigation and 27 required special surveys. 190 were identified as imported cases, ten were relapses, and the remaining one was unknown as he could not be found (wrong address).

(c) *Check on Mosquito Breeding in Rural Oiling Areas*.—As a check on the efficiency of the Rural Anti-Malarial Work, 307 rural malarial surveys were carried out and the summary total of the various mosquito species collected on these surveys is given below:

A. maculatus	..	..	..	26	} Vector Species
A. sundaicus	..	..	..	28	
A. baezai	..	..	..	7	
A. kochi	..	..	..	209	
A. hyrcanus	..	..	..	892	
A. vagus	..	..	..	19	
A. separatus	..	..	..	1	

22 field situations were also reported to the District Health Officer.

Table 34 summarises the finding malaria vector species and other irregularities in the field.

TABLE 34

District	VECTOR SPECIES		Damaged A.M. Drains	Chocked Subsoil Drains	Blocked Cover A.M. Drains	Earth Drains Blocked
	A. Macu- latus	A. Sun- daicus				
Katong ..	7	7	2	..	1	..
Serangoon ..	14	4	5	2	1	1
Bukit Panjang / Jurong ..	5	15	2	2	3	3
Southern Islands ..	..	..	..	..	..	..
Jurong Industrial Area ..	..	2*	..	..	..	..

*Outside oiling area.

Special Surveys.—27 special surveys were carried out to check on the possibility of local transmission of malaria.

In addition, an extensive survey in the Jalan Kayu Area was carried out early in the year to assess the malarial status of that place where the Forces had in recent years ceased anti-malarial control work. Ten breeding sites of *A. sundaicus* and one of *A. maculatus* were found, but there was no evidence of malaria transmission in the area.

The following were the collections made during the 28 surveys:

A. maculatus	..	..	..	..	4
A. sundanicus	..	..	..	..	19
A. kawari	..	..	..	..	3
A. hyrcanus	..	..	..	..	40
A. kochi	..	..	..	..	18
A. philippinensis	..	..	..	..	1
A. vagus	..	..	..	..	5
Aedes albopictus	..	..	..	..	7
Culex	..	..	..	..	17

Table 35 summaries the work done under the Airport Drainage Scheme.

TABLE 35

Concrete Drains constructed	..	..	977 feet
Widening of drains	..	..	177 feet
Brick-wall drain stepping constructed	..	..	23
Concrete retaining walls constructed	..	..	2
18" Invert culvert laid	..	..	12 feet
30" Hume Pipe culvert laid	..	..	5 feet
18" Hume Pipe culvert laid	..	..	5 feet
Maintenance (grass clearing and desilting)	..	..	53,700 yards

Chapter Nine

THE SCHOOL HEALTH SERVICE

GENERAL

THE School Health Service is centrally administered at the Institute of Health, Outram Road.

During the year, 21 new schools were opened and ten schools ceased to function. At the end of 1965 there were 595 schools in the State, not including the miscellaneous schools (i.e. religious, commercial, sewing, dancing, etc.).

In addition to the 21 new schools, many of the existing schools carried out additions and alterations to enlarge their premises to make accommodation available for more pupils. There were approximately 59,910 new entrants, most of whom were admitted the first year of the primary school course. The total school population rose from 457,136 in 1964 to 482,111 in 1965, an increase of 24,975.

A classification of Government, Government-Aided and Private schools together with the enrolment for 1964 and 1965 is shown in Table 36.

TABLE 36

SUMMARY OF SCHOOLS AND THE SCHOOL POPULATION IN SINGAPORE

				<i>Number of Schools</i>		<i>Enrolment</i>	
				1964	1965	1964	1965
Government Schools:							
(a) English	..	..	..	128	120	154,870	147,560
(b) Malay	..	..	..	43	43	25,352	24,924
(c) Chinese	..	..	..	13	13	17,003	16,860
(d) Indian	..	..	..	2	2	195	204
(e) Integrated	..	..	..	43	53	63,653	95,993
(f) Vocational	..	..	..	—	8	—	1,930
(g) Technical	..	..	..	—	9	—	2,429
Aided Schools:							
(a) English	..	..	..	49	45	46,474	47,311
(b) Chinese	..	..	..	221	214	135,807	131,609
(c) Indian	..	..	..	13	13	1,587	1,599
(d) Vocational	..	..	..	—	2	—	576
Private Schools:							
(a) English	..	..	..	42	42	8,327	8,273
(b) Chinese	..	..	..	30	31	3,868	2,843
Total				<u>584</u>	<u>595</u>	<u>457,136</u>	<u>482,111</u>

60.13% of all the pupils attended Government Schools.

37.56% of all the pupils attended Aided Schools.

2.31% of all the pupils attended Unaided Schools.

The geographical distribution of schools and the enrolment of Government and Government-Aided Schools as compared with Private Schools are shown in Tables 37 and 38.

TABLE 37

GEORAPHICAL DISTRIBUTION OF SCHOOLS IN SINGAPORE FOR 1965

			<i>City</i>	<i>Rural</i>	<i>Island</i>
Government and Government Aided Schools	..		274	228	20
Private Schools	..	..	57	15	1

TABLE 38

DISTRIBUTION OF SCHOOL POPULATION IN SINGAPORE SCHOOLS FOR 1964 AND 1965

	<i>Year</i>		<i>Government and Government Aided Schools</i>	<i>Private Schools</i>	<i>Total</i>
1964	444,941	12,195	457,136
1965	470,995	11,116	482,111

STAFF

The staff at the end of 1965 comprised of one Senior Health Officer-in-charge of Schools, seven Health Officers, eight Lady Health Officers, three Health Sisters, 12 Staff Nurses, ten Assistant Nurses, one Almoner, one Chief Dispensing Assistant, three Dispensing Assistants, one Laboratory Technician, two Public Health Inspectors, one Radiographer and other miscellaneous subordinates staff.

(1) *Routine Medical Examination*

Due to the lack of medical staff, the routine medical examination of children was confined to Government and Government-Aided Schools only. Whilst no examinations are conducted at non-aided (private) schools, children from such schools, may, and do attend the school clinics which are open to all school children. As and when the staffing position improves, it is intended to extend this service to the private schools.

Because of the enormous size of the school population, it has been found necessary to establish a system of selective examinations. The School Health Officers confine their attention to particular groups. The groups include:

- (a) new entrants;
- (b) primary and secondary school leavers;
- (c) defectives found at previous examinations;
- (d) others, referred by the principals or teachers because their physical or mental progress was considered to be below par.

Table 39 shows the number of medical examinations by sex, of the respective groups.

TABLE 39

CLASSIFICATION OF MEDICAL EXAMINATIONS DONE
ON SCHOOL CHILDREN IN SINGAPORE IN 1965

		<i>Girls</i>	<i>Boys</i>	<i>Total</i>
New Entrants .. ..	..	26,505	29,295	55,800
Primary Leavers .. ..	..	22,131	26,495	48,626
Secondary Leavers .. ..	..	6,717	9,527	16,244
Re-examinations .. ..	..	16,830	4,125	20,955
Others .. ..	..	5,534	3,682	9,216
Total .. ..	..	<u>77,717</u>	<u>73,124</u>	<u>150,841</u>

Out of a total of 522 Government and Government-Aided Schools, 496 were visited by a Health Officer or a Lady Health Officer, and in the case of a mixed school by both a Health Officer and a Lady Health Officer. A total number of 150,841 children were examined as against 125,289 in 1964, 115,843 in 1963, 132,392 in 1962.

Table 40 shows the summary of schools, school population, children examined and Health Officers, 1961 to 1965.

TABLE 40

			1961	1962	1963	1964	1965
Registered Schools .. ..	..	..	776	568*	582*	584*	595*
Students .. ..	..	..	379,604	401,587	429,150	457,136	482,111
Students Examined .. ..	..	..	93,402	132,392	115,843	125,289	150,841
Health Officers .. ..	..	..	11	11	12	12	15

*A school with morning and afternoon sessions is counted as one school.

Table 41 shows the number of boys and girls examined at the various types of schools.

TABLE 41

CLASSIFICATION OF CHILDREN EXAMINED IN SINGAPORE SCHOOLS IN 1965

<i>Schools</i>		<i>Girls</i>	<i>Boys</i>	<i>Total</i>
Government English .. ..	..	26,899	26,653	53,552
Aided English .. ..	..	8,734	6,245	14,979
Government Chinese .. ..	..	2,192	2,395	4,587
Aided Chinese .. ..	..	22,032	20,151	42,183
Government Malay .. ..	..	5,808	3,163	8,971
Government and Aided Tamil .. ..	..	469	130	599
Government Integrated .. ..	..	10,683	12,946	23,629
Government and Aided Vocational Technical .. ..	..	900	1,441	2,341
Total .. ..	..	<u>77,717</u>	<u>73,124</u>	<u>150,841</u>

TABLE 42

Table 42 gives a classification of Singapore schools inspected by School Health Officers in 1965.

<i>Schools</i>			<i>City</i>	<i>Rural</i>	<i>Island</i>	<i>Total</i>
Government English	..	..	82	35	—	117
Aided English	..	..	25	22	—	47
Government Chinese	..	..	11	2	—	13
Aided Chinese	..	..	87	123	—	210
Government Malay	..	..	15	16	—	31
Government and Aided Tamil	..	..	9	6	—	15
Government Integrated	..	..	32	17	—	49
Government and Aided Vocational/ Technical	..	..	11	3	—	14
Total			272	224	—	496

(2) General Health

On the whole, the general standard of health of the new entrants is fair and that of the school leavers good.

Of the total number of school children examined by the School Health Officers, 67.34 per cent of the boys examined were rated as being of good general condition, 32.23 per cent fair, and .43 per cent poor. The corresponding figures for girls were 46.96 per cent good, 47.82 per cent fair and 5.22 per cent poor.

(3) Treatment of Minor Ailments

Apart from dental caries and defective vision, a much higher percentage of defectives was found among the new entrants than the school leavers.

The following table gives the incidence of the various defects.

TABLE 43

Table 43 shows the incidence of defects detected in routine school medical examination 1961–65.

Defects			1961	1962	1963	1964	1965
Dental Caries	..	Boys	47.38	47.24	40.59	35.85	32.32
		Girls	44.41	41.11	38.68	40.01	40.66
Skin conditions	..	Boys	3.33	4.36	3.70	4.11	3.46
		Girls	9.97	9.15	6.94	5.35	5.14
Eyes: Infections	..	Boys	.49	.73	.91	1.51	.9
		Girls	.51	.39	.35	.34	.39
Defective vision	..	Boys	5.52	6.52	5.72	6.33	6.81
		Girls	7.33	7.68	10.17	9.02	10.08
E.N.T. Enlarged tonsils	..	Boys	.43	.15	.52	.16	.15
		Girls	.07	.11	.22	.19	.23
Ear infections	..	Boys	.28	.34	.39	.47	.22
		Girls	.14	.06	.07	.06	.09

TABLE 43 — *continued.*

Defects			1961	1962	1963	1964	1965
Cardiac Disease ..	..	Boys	.24	.27	.65	.77	.73
		Girls	.44	.37	.52	.44	.59
Respiratory Infections ..	..	Boys	.75	.96	1.53	1.31	.76
		Girls	2.20	1.08	1.14	2.04	1.56
Genito-Urinary Conditions ..	..	Boys	2.05	2.86	6.10	6.17	5.9
		Girls	.38	.27	.24	.29	.29
Anaemia (under 60% Haemoglobin)		Boys	.55	.33	.46	.12	.09
		Girls	.51	.58	1.28	.96	.48
Worm Infestation ..	..	Boys	3.46	1.34	.76	4.16	.7
		Girls	8.70	5.06	4.58	5.47	4.45
Other abnormalities including post- ural defects, Cleft Palate, and Chest Deformities ..	..	Boys	.42	1.36	2.27	2.49	1.32
		Girls	2.79	1.02	1.54	2.00	1.21
Children Examined ..	..	Boys	44,695	61,489	63,402	63,235	73,124
		Girls	48,707	70,903	52,441	62,054	77,717

(a) *Dental Caries.*—This is by far the most common defect found among school children and about 40 per cent of them were found to be suffering from caries of varying severity. The present facilities offered by the Government for dental treatment are inadequate. (There are only two Government Dental Clinics, one at the Institute of Health and the other at Pegu Road. In addition, there are three school mobile dental clinics, and 30 school dental units.) However, it is the intention of the Government to incorporate dental huts in the new schools that are to be built in the future. The Government has started a scheme to train local girls as dental nurses who on completion of their training should be able to augment the staff attached to the School Dental Service.

(b) *Skin Infections.*—Skin conditions such as sores, ulcers, impetigo, ringworm, eczema and scabies are more common among children from the Rural areas, due to the lower standard of environmental hygiene. Phrynoderma, xeroderma and follicular hyperkerotosis are common findings among children suffering from malnutrition and who come from very poor homes. Nits and lice are more often found in Malay and Indian children.

11 cases of neuroderma were referred to the Hansen's Clinic (Irrawaddy Road) and of these, one was admitted into the Trafalgar Home after the diagnosis of leprosy was confirmed.

(c) *Eye Conditions.*—Conjunctivitis, corneal opacities and occasionally trachoma were seen, and where necessary, referred to the Ophthalmologist at the General Hospital.

Visual defects were relatively higher in the older children and they were referred to their own Opticians for the supply of spectacles. The poorer children were issued with free spectacles at Government's expense. A total of 1,500 pairs of free spectacles were supplied in 1965 as compared with 1,265 in 1964.

(d) *Organic Valvular Heart Disease*.—Mitral stenosis, auricular and ventricular septal defects, patent ductus arteriosus and pulmonary stenosis are the common heart defects found. In the case of the acquired cardiac disabilities they are probably of rheumatic origin although a previous history of rheumatic fever is very difficult to obtain.

These cases are referred to the Cardiac Clinic at the Institute of Health which is held every Wednesday morning under the charge of the Professor of Medicine, University of Singapore.

(e) *Anæmia*.—Cases of anæmia, particularly gross anæmia, were found more in the Rural areas where worm infestation is prevalent. A certain number of these cases were due to nutritional causes in both urban and rural areas.

(f) *Helminthiasis*.—Worm infestation was of 4.45 per cent among girls and 7 per cent among boys.

The children in the rural areas are, more commonly, infested with hook-worms. This is due to poor sanitary facilities, the use of nightsoil as garden or vegetable manure, and the failure of children to use footwear.

(g) *Personal Hygiene*.—Although there is some improvement in the general cleanliness among school children, yet it is felt that more attention should be paid to the care of teeth and finger nails and the wearing of shoes particularly in the rural schools. School teachers can play an important part by devoting some time for the practical teaching of personal hygiene and for the daily inspection of the pupils for general cleanliness and good personal hygiene.

(4) *School Clinics*

There is one main clinic at the Institute of Health, Outram Road, which functions daily both in the mornings and afternoons. There are three subsidiary clinics conducted at the General Outpatient Clinic premises in the Urban and Rural areas. These are:

- (a) The Paya Lebar Clinic;
- (b) The Kallang Clinic; and
- (c) The Bukit Timah Clinic.

The Paya Lebar Clinic functions on Monday and Friday afternoons, the Kallang Clinic on Wednesday afternoons and the Bukit Timah Clinic on Saturday mornings. The Health Officers responsible for the schools served by the particular clinic are in attendance at each clinic session to follow up their own cases. Cases requiring special attention are referred to the Specialists, hospitals or other institutions.

Tables 44 and 45 show the attendances at the school clinics for the years 1961 to 1965, and the breakdown of school clinic attendances respectively, while Table 46 shows the cases referred to the Specialists, hospitals and other Institutions.

TABLE 44

ATTENDANCES AT SCHOOL CLINICS

	1961	1962	1963	1964	1965
Total number of new cases ..	52,196	55,678	53,160	54,973	54,778
Total number of re-visits ..	74,612	92,664	91,948	93,820	109,212
Total ..	<u>126,808</u>	<u>148,342</u>	<u>145,108</u>	<u>148,793</u>	<u>163,990</u>

TABLE 45

BREAKDOWN OF ATTENDANCES AT SCHOOL HEALTH CLINICS IN 1965

		<i>New Cases</i>	<i>Repeat Cases</i>	<i>Total</i>
Institute of Health Clinic ..	..	43,896	96,133	140,029
Paya Lebar Clinic ..	..	6,480	6,472	12,952
Kallang Clinic ..	..	2,547	3,864	6,411
Bukit Timah Clinic ..	..	1,855	2,743	4,598
Total ..	..	<u>54,778</u>	<u>109,212</u>	<u>163,990</u>

TABLE 46

SCHOOL CHILDREN REFERRED TO SPECIALISTS, HOSPITALS AND OTHER INSTITUTIONS IN SINGAPORE IN 1965

(i) *Cases referred to Specialists:*

Cardiac Specialist ..	..	150	Middleton Hospital ..	..	131
E.N.T. Specialist ..	..	277	Middle Road Hospital ..	..	46
Psychologist ..	..	31	Woodbridge Hospital ..	..	3
Paediatrician ..	..	171	Trafalgar Home ..	..	1
Ophthalmic Surgeon ..	..	731	Cases Admitted to Thomson		
Surgeons ..	..	737	Hospital ..	..	20
Physicians ..	..	174	Cases admitted to Tan Tock Seng		
Orthopaedic Surgeon ..	..	240	Hospital ..	..	12
Skin Specialist ..	..	26	Cases admitted to St. Andrew's		
Gynaecologist ..	..	18	Hospital ..	..	8

(ii) *Cases referred to Hospitals and Other Institutions:*

Casualty Department, General			Dental Clinic at Institute of Health		520
Hospital ..	..	138	Dental Clinic at Pegu Road ..	..	15
Emergency Unit, General Hos-			Dental Clinic at Jalan Teck Whye ..	..	27
pital ..	..	203	X-ray Department at General Hos-		
General Hospital for admission		191	pital ..	..	131
Physiotherapy Department,			X-ray Department at Institute of		
General Hospital ..	..	6	Health ..	..	495

School Travelling Dispensaries.—The two travelling dispensaries in the charge of a Senior Staff Nurse and by three Assistant Nurses visited the rural and remote urban schools during the year for the treatment of minor ailments and to follow up cases referred by the School Health Officers.

The total number of visits to schools and the treatment given are shown in the following Table 47.

TABLE 47

TOTAL NUMBER OF VISITS TO SCHOOLS AND TREATMENT GIVEN BY THE TRAVELLING DISPENSARIES 1963 TO 1965

		1963	1964	1965
Total Number of visits to schools	..	828	932	920
Total Number of treatment given	..	41,535	47,292	58,603

Control of Tuberculosis in School.—This is effected:

- (i) through the routine school examination. Tuberculosis children are referred to and treated by the School Tuberculosis Officer;
- (ii) routine Chest X-ray examination of teachers, other school staff and hawkers.

From July 1962, the routine annual X-ray examination of teachers, school staff and hawkers already in employment was taken over by the Assistant Director of Medical Services (Tuberculosis) as part of the anti-tuberculosis programme for schools undertaken by the Tuberculosis Control Unit.

Infectious Diseases.—Table 48 shows the number and types of cases of infectious diseases reported during the last five years in schools in Singapore.

TABLE 48

INFECTIOUS DISEASES IN SCHOOLS IN SINGAPORE 1961 TO 1965

			1961	1962	1963	1964	1965
Chickenpox	..	..	170	158	285	104	303
Diphtheria	..	..	335	162	111	52	51
Mumps	..	..	447	300	514	776	404
Dysentery	..	..	26	24	11	14	19
Leprosy	..	..	3	1	2	3	1
Malaria	..	..	2	6	3	2	2
Measles	..	..	17	28	118	88	31
Poliomyelitis	..	..	3	1	1	2	2
Typhoid fever	..	..	7	—	2	—	167
Whooping cough	..	..	35	25	10	28	3
Cholera	..	..	—	—	—	3	—

Typhoid outbreak in Chung Cheng High School (Goodman Road).—An outbreak of typhoid fever occurred in Chung Cheng High School towards the end of March. Prompt epidemiological investigations followed by effective preventive measures brought the epidemic under control. Altogether 97 students and one part-time teacher from Chung Cheng High School contracted typhoid fever with two deaths.

The School Public Health Inspectors were deployed full time to assist in the investigation and control of the outbreak. Sanitary improvements to the school tuckshops and repairs of defective water closets were carried out by the school authorities. Nearly 3,000 students and staff of the school were immunised against typhoid.

School Immunisation Programme.—The School Immunisation Programme which started in May 1964, was continued during the year. Three mobile teams visited the schools to give immunisations against diphtheria, tetanus, poliomyelitis and smallpox to Primary one students. In schools which had not been visited in 1964, immunisations against diphtheria, tetanus and poliomyelitis were also offered to Primary two students in addition to Primary one students.

The following Table summarise the work done by the School Immunisation teams:

TABLE 49

IMMUNISATIONS OF SCHOOL CHILDREN

<i>Type of Immunisation</i>		<i>Primary I Students</i>	<i>Primary II Students</i>	<i>Total</i>
Diphtheria and Tetanus 1st dose	..	21,044	9,865	30,909
	2nd dose	.. 20,763	8,126	28,889
	Booster	.. 10,364	3,814	14,178
Tetanus toxoid ..	..	.. 3,108	621	3,729
Sabin 1st dose ..	..	.. 34,989	15,010	49,999
2nd dose	..	.. 32,471	12,145	44,616
Smallpox Revaccination ..	..	.. 34,799	—	34,799

(5) *Home and School Visiting*

Homes and Schools were visited by a team of School Health Nurses. They were responsible for the following:

- (a) to investigate and follow-up cases of tuberculosis;
- (b) to follow-up cases of infectious diseases reported by various authorities;
- (c) to take throat swabs of all indirect contacts of cases of diphtheria reported by the District Health Officers (677 throat swabs were taken in 1965 as against 521 in 1964); and
- (d) to carry out the preliminary examination of the school children including the taking and recording of the height and weights prior to the routine medical examination of these children by the School Health Officers.

(6) *Almoner Service*

This service was commenced in December 1961 when an almoner was appointed to the School Health Section. The work in relation to the Almoner Service has increased considerably since its inception, and the major part of the almoner's duties is related to social problems. The majority of the problems dealt with during the year were as follows:

(a) *In the Tuberculosis Treatment Section*

- (i) Children referred for tuberculosis treatment allowance.
- (ii) Children with tuberculosis on special feeding scheme.

(b) *In the School Clinics and Schools*

- (i) Non-attendance of defaulters suffering from chronic complaints.
- (ii) Educationally subnormal children. Children in this category present a problem for which there is no solution in view. The long term care of those who are in the higher range of educationally subnormal category and who are suitable for special classes within normal schools is yet to be solved, as there is no such provision made in the present education system. Some of those who are at the lower range of the educationally subnormal category have been accepted by the Chin Poo Centre run by the Singapore Association for Retarded Children. There is a long waiting list for enrolment at the above Centre. Most of these children are referred to the Psychologist Clinic held at the Institute of Health.
- (iii) Malnourished children. Children in this category constituted about half of the total number of referral to the almoner. The majority of these came from families who are on welfare relief or families whose income is below subsistence level.
- (iv) Truants.

(7) *Feeding Schemes*

There are two types of feeding schemes for school children. Slightly undernourished children are supplied with free skimmed milk, made available through the courtesy of the Social Welfare Department on the recommendations of the School Health Officers. The milk which is prepared in the school is flavoured with Milo and distributed to the children during the recess.

This skimmed milk preparation is now very popular with the children and 32,200 were recommended for the issue of this milk for the year.

The other scheme is to help those children belonging to the less privileged families. Whilst the scheme caters for school children with any type of pathological condition, in practice it is found that most of those receiving this extra nutrition have some type of tuberculous lesion. A sum of \$25,000 was provided by the Government in the 1965 Estimates to meet the cost of this scheme.

The ration consists of: 1 lb. full cream powdered milk, $\frac{1}{2}$ lb. vitaminised skimmed milk, $\frac{1}{4}$ lb. ovaltine for flavouring, $\frac{1}{2}$ lb. fresh butter, 6 fresh hen eggs, 6 oranges, 1 lb. groundnuts.

The above ration is issued fortnightly to the child until such time as his condition shows sufficient improvement. During the year, 7,367 such fortnightly rations were issued to 655 children.

(8) *Environmental Hygiene in Schools*

Further improvement was achieved in the field of environmental hygiene and sanitation in the Singapore Schools during the year. Such progress is only rendered possible with the willing co-operation and concerted effort made by the various departments concerned and in particular by the Ministry of Education and the School Managements.

(a) *Sanitary Inspections and Reports.*—Two fully qualified Public Health Inspectors carried out routine sanitary inspections of schools for the purpose of ensuring compliance of the health provisions as contained in the Education Ordinance, the Schools Regulations and other public health legislations applicable to schools. In addition special visits were made by these officers to investigate complaints received, nuisances reported, applications for registration made and layouts of new schools received or additions and alterations of existing schools applied for.

During the year 919 routine and special inspections were carried out and 778 reports were submitted to the Ministry of Education, Chief Building Surveyor's Department, Public Health Division, Principals of Schools and other departments. 76 school layouts and building plans were dealt with.

(b) *Registration of Schools.*—In 1965, 13 applications for registration of schools were referred by the Ministry of Education to this Branch for advice and comments. All of them were recommended for registration from the health point of view subject to the compliance of the health requirements.

(c) *School Tuckshops.*—Regular inspections were made of the school tuckshops to ensure the maintenance of a reasonable high standard of food hygiene in these food premises. Health education and advice on the importance of personal and food hygiene were freely given to the stall-holders during such visits.

During the year nine schools were provided with proper tuckshops while another ten schools were requested to put up suitable tuckshops.

(d) *Piped Water Supply.*—There are still about fifty schools in mainland Singapore which have not been laid on with piped water supply. These schools are either not in a financial position to install such supply or are situated in localities where there are no piped water mains.

Recommendations have been made to the Ministry of Education for these schools to be provided with piped water supply wherever such connection is feasible.

(e) *Modern Sanitation.*—The Public Works Department has commenced its sewerage extension schemes in the Pasir Panjang Area from Kampong Heap Guan San (off Telok Blangah Road) to 8th milestone West Coast Road and

also along Jalan Eunus. It is expected that these schemes will be completed by the end of 1966.

Many of the schools situated in the areas which are at present only equipped with conservancy system of nightsoil disposal will be requested by this Branch to convert to water-borne system of nightsoil disposal when these sewerage extension schemes are completed.

During the year two schools were equipped with modern sanitation while seven other schools were recommended to install water-borne system of nightsoil disposal.

Chapter Ten

THE MATERNAL AND CHILD HEALTH SERVICES

GENERAL

THE administration centre for the Maternal and Child Health Services is at the Institute of Health. 1965 has been a year of consolidation trying to improve the quality of services offered and at the same time coping with the ever increasing numbers seeking the services.

The main function of the Maternal and Child Health Services is in preventive medicine although a curative service for minor ailments has been included to serve the needs of the population.

The Service operates a network of three types of clinics listed as follows:

TABLE 50

			<i>Rural</i>	<i>City</i>	<i>Total</i>
(a) Main Centres	..	..	22*	10	32
(b) Kampong Midwives Centres	..	..	10	—	10
(c) Visiting Centres	..	..	21	1	22

TABLE 51

LIST OF CLINICS AND CENTRES AS ON 31ST DECEMBER, 1965

<i>Main Centres (32)</i>	<i>Midwife Centres (10)</i>	<i>Visiting Centres (22)</i>
Rural:	Rural:	Rural:
1. Airport	1. *Bulim	1. Ayer Gemuroh
2. Ama Keng	2. Jalan Eunus	2. Blakang Mati
3. Bedok, 9.ms.	3. Jurong, 10 m.s.	3. *Bulim
4. Bukit Panjang	4. Kim Chuan	4. Chia Keng
5. Bukit Timah	5. *Loyang	5. Damar Laut
6. Buona Vista	6. *Ponggol	6. Kampong Bajau
7. Chai Chee	7. *Pulau Ubin	7. Kampong Blukang
8. Changi	8. St. John's Island	8. Lazarus Island
9. Holland Road	9. Somapah	9. *Loyang
10. Jalan Bahru	10. Pulau Ayer Merlimau	10. *Ponggol
11. Jurong, 12 m.s.		11. Pulau Ayer Merbau
12. Jurong, 18 m.s. (Tuas.)		12. Pulau Ayer Merlimau
13. Kranji		13. Pulau Bukom Kechil
14. Lim Ah Pin		14. Pulau Sebarok
15. Mandai (Nee Soon)		15. Pulau Seking
16. Pulau Brani		16. Pulau Semakau
17. Pulau Tekong		17. Pulau Seraya
18. Sembawang		18. Pulau Sudong
19. Still Road		19. *Pulau Ubin
20. Thomson Road		20. St. John's Island
21. Thong Hoe		21. Tanjong Murai
22. Yio Chu Kang		

*Midwife Centre cum Visiting Centre (4).

TABLE 51—*continued*

City:

1. Alexandra
2. Bukit Ho Swee
3. Aljunied Road
4. Institute of Health
5. Joo Chiat Road
6. Kallang Estate
7. Kim Keat
8. Kreta Ayer Clinic
9. Prinsep Street Clinic
10. Queenstown

City:

1. Radin Mas

THE MATERNITY SERVICES

These include (a) antenatal care, (b) intranatal care, (c) postnatal care.

Family Planning Services were also offered at sessions run by the Family Planning Association in the Maternal and Child Health clinics.

(a) *Antenatal Care*.—There has been an increase in attendances at antenatal sessions during 1965, both in the Midwives and the L.M.O's session. In two City Main Centres (Queenstown and Aljunied Road) it has been found that an afternoon session for the L.M.O's Antenatal Clinic is sufficient to cope with the numbers attending, so that it has been necessary to utilise a morning session in addition (at the expense of an Infant Welfare session).

The increase has resulted from the policy of the Kandang Kerbau Hospital that all antenatal patients must attend at Maternal and Child Health Clinics in the first instance, and only those patients at risk can be referred for consultant care. Thus patients without appointments and referral letters must attend at the Maternal and Child Health Clinics of their own area before they can go to the Hospital. Women are also now aware of the benefits of antenatal care and an average of 5–6 attendances are made per patient. They are also coming earlier in pregnancy.

TABLE 52

ATTENDANCES AT ANTENATAL SESSIONS

	<i>Year</i>		<i>Rural</i>	<i>City</i>	<i>Total</i>
1961	108,067	31,946	140,013
1962	111,995	39,313	151,308
1963	80,458	40,169	120,627
1964	89,378	52,095	141,473
1965	96,114	64,935	161,049

(b) *Intra Natal Care*.—A Domiciliary Midwifery Service is manned by Government Midwives resident at the Main Centres and Midwife Centres. They are on call for a 24-hour service. Patients desirous of the service of these Midwives at the confinement in the home are required to attend at the Antenatal Clinics and arrangements are only made if they are considered suitable for home confinement.

However during 1965 confinement in the home continues to show a downward trend, as more and more people realise the benefits of being delivered in Hospital.

TABLE 53

			<i>Number of Confinements in the Homes attended by Government Midwives</i>			<i>Confinements by Private Midwives</i>		<i>in Kandang Kerbau Hospital</i>	<i>Total Births*</i>
			<i>Rural</i>	<i>City</i>	<i>Total</i>				
1963	..	..	4,526	887	5,413	8,176		39,436	53,025
1964	..	..	5,320	1,016	6,336	8,006		39,598	53,940
1965	..	..	4,846	713	5,559	6,879		38,849	51,287

*This excludes births in Private Hospitals and Private Maternity Homes.

Maternal Death.—There were seven deaths among the domiciliary cases — of these, three occurred in hospital, and four were home confinements.

Racially four were Chinese and three Malays.

The average number of children for each of these women was nine.

The average age of these women was 37.

Three had not received antenatal care and three did not call for assistance in time (Birth Before Arrival).

Three deaths were due to hæmorrhage and two were cardiac cases who should not have been grandemultips.

(c) *Postnatal Care.*—This is achieved by:

(i) The Domiciliary Aftercare Service.

(ii) Follow-up of newborn babies and puerperal mothers by District Sisters or Staff Nurses paying Home Visits.

(iii) Attendances at Postnatal Sessions in the clinics.

(i) *The Domiciliary Aftercare Service.*—This service caters for mothers who are delivered at Kandang Kerbau Maternity Hospital and then return home within 24 hours.

TABLE 54

D.A.C. PATIENTS ATTENDED BY GOVERNMENT MIDWIVES

			<i>Year</i>	<i>Rural</i>	<i>City</i>	<i>Total</i>
1963	11,245	12,279	23,524
1964	11,949	12,165	24,114
1965	12,563	11,977	24,540

(ii) *Follow-up Service.*—Every registered birth receives a follow-up Home Visit by the District Sister or Staff Nurse during the puerperium to ensure that all is well. This includes cases delivered by private midwives. Where medical attention is required, the patients are referred either to the Lady Medical Officer-in-charge of the Maternal and Child Health Clinic of the area, or to Hospital according to the needs of the cases. Moreover, valuable advice on the care of the newborn and the health of the mother in the puerperium as well as the benefits of Family Planning can be imparted during these visits.

TABLE 55

SUMMARIES OF WORK DONE IN RELATION TO MATERNAL SERVICES IN 1963 TO 1965

	1963			1964			1965		
	Rural	City	Total	Rural	City	Total	Rural	City	Total
Antenatal Visits to Clinics	80,458	40,169	120,627	89,378	52,095	141,473	96,114	64,935	161,049
Postnatal Visits to Clinics	3,414	983	4,397	3,979	3,979	7,958	3,884	6,374	10,258
Confinements attended by Government Midwives	4,526	887	5,413	5,320	1,016	6,336	4,846	713	5,559
Mother in Labour sent to K.K.M.H.* ..	465	25	490	507	22	529	456	23	479
Visits by Midwives in Puerperium† ..	92,249	62,934	155,183	97,349	60,660	158,009	98,662	61,312	159,974

*Kandang Kerbau Maternity Hospital.

†These include visits for cases in both the Domiciliary Service and the Domiciliary After-Care Services.

TABLE 56

TABLE OF CONFINEMENTS BY ATTENDANTS, 1963 TO 1965

	1963	1964	1965
	<i>Total</i>	<i>Total</i>	<i>Total</i>
Total No. of Live Births	59,530	58,217	—
Total No. of Still Births	739	694	—
Confinements attended by Government Midwives ..	5,413	6,336	5,559
Confinements attended by Private Midwives ..	8,176	8,006	6,879
Confinements attended by Private Doctors ..	3,395	3,632	3,473
Confinements in Kandang Kerbau Hospital ..	39,436	39,598	38,849
Self-attended cases	38	82	58

THE CHILD HEALTH SERVICES

The Services provided for the pre-school child are:

- (a) a comprehensive immunisation programme;
- (b) advice on Health Education to mothers on child care, in particular the infant;
- (c) treatment of minor ailments.

(a) *Immunisation Programme*.—This includes: (i) B.C.G. vaccination; (ii) vaccination against smallpox; (iii) immunisation against diphtheria/whooping cough/tetanus; (iv) immunisation against poliomyelitis; (v) emergency campaigns for immunisation against cholera and typhoid.

(i) *B.C.G. Vaccination*.—This vaccination is offered to the newborns. It is on a voluntary basis, but the response is good. It is given in conjunction with the long term anti-tuberculosis programme planned by the Tuberculosis Control Unit. During 1965, 15,961 infants received B.C.G. vaccination in Maternal and Child Health Clinics, of whom 7,640 were Rural and 8,321 City.

(ii) *Smallpox Vaccination*.—This vaccination is compulsory. Under the Quarantine and Prevention of Diseases Ordinance, Chapter 147, it is obligatory for all children to be vaccinated by six months of age. A total of 44,916 children were given primary vaccination in clinics and by Kampong Immunisation Teams through the Maternal and Child Health Services and 8,060 revaccination had to be done. A further 11,157 were done by private practitioners, making a total of 56,073.

(iii) *Diphtheria Immunisation*.—Diphtheria immunisation was made compulsory in March 1962. For primary inoculation this is now given routinely in combination with other immunising agents against pertussis and tetanus except in the case of older children who are contacts, when T.A.F. is used. Immunisation is carried out at all Maternal and Child Health Clinics and by Mobile Teams going out to the kampongs. A total of 40,629 children completed their primary diphtheria immunisation by the time they reached 2 years of age. In addition the immunisation drive succeeded in obtaining another 15,776 primary immunisations in children over the age of 2 years. In addition Booster doses have been given in order to keep up the level of immunity for those who had had their primary course — namely:

T. A. Boosters	...	6,652
D. T. Boosters	...	32,222
		<hr/>
Total	...	38,874
		<hr/>

(iv) *Poliomyelitis*.—To maintain the picture of immunity created by the 1962 Polio Immunisation Campaign, when 76 per cent of the vulnerable child population was immunised, oral trivalent vaccine is now routinely offered to all infants and pre-school children attending the Maternal and Child Health Centres. The primary courses are offered at monthly intervals simultaneously with diphtheria immunisation, as are the boosters. Oral Sabin vaccine is used in the following sequence:

- 1st two doses are with Types 1 and 3 and
- 3rd dose consists of Types 1, 2 and 3.

A total of 57,369 primary courses were completed while 47,215 boosters were given.

(v) *Emergency Immunisations*.—During the year the Maternal and Child Health Services was called upon to deal with two emergencies.

1st. — Royal Malaysian Navy — Woodlands — A case of diphtheria occurred in a mother staying in the Navy personnel quarters. At the request of the medical officer a team from the Maternal and Child Health Services went to Woodlands to immunise direct contacts and at the same time seized the opportunity to offer diphtheria and poliomyelitis immunisations to the infants and pre-school children of local personnel.

2nd. — Typhoid outbreak at Chung Cheng High School — A Mobile Immunisation Team undertook typhoid inoculation at the school.

The numbers inoculated were: 1st dose — 2,847, 2nd dose — 2,807.

(b) *Advice and Health Education on Child Care.*—Attendances in clinics during 1965 continued to increase. There were 457,906 attendances by infants and 428,211 attendances by pre-school children. The corresponding figures for 1964 were 443,273 and 366,345 respectively.

Advice on child care and general health measures is given at all clinic sessions. The Service also distributes free full cream and skimmed powdered milk, infant food supplements, multivitamins and other nutritional supplements to the needy cases.

(c) *Treatment of Minor Ailments.*—This forms part of the functions of the Maternal and Child Health Clinics. 51.4 per cent of the infants and 54.5 per cent of the pre-school toddlers attending the clinics in 1965 needed treatment of minor ailments.

ATTENDANCES—NUMBER OF CHILDREN IMMUNISED AND OTHER
FUNCTIONS IN MATERNAL AND CHILD HEALTH CLINICS FOR 1963,
1964 AND 1965

					1963	1964	1965	
Attendances:								
Infant	..	..	..	..	447,539	443,273	D/T and T.A.F.
Toddler and Pre-school	..	..	..	..	382,931	366,345	
B.C.G.	..	..	..	..	14,025	14,663	
Primary Vaccination	..	..	..	..	45,480	45,774	
Diphtheria Immunisation:								
Clinic	..	{	1st Dose	6,656	9,562	}
			2nd Dose	..	..	6,469	7,907
			Boosters	..	..	6,363	13,279
Kampong	..	{	1st Dose	1,541	1,892	}
			2nd Dose	..	..	1,055	1,325
			Boosters	..	..	740	1,056
Triple Antigen (Clinic)	..	{	1st Dose	49,534	40,474	
			2nd Dose	..	..	44,199	40,249
			3rd Dose	..	..	43,372	39,506
			Boosters	..	..	16,228	11,144
Triple Antigen (Kampong)	{	1st Dose	..	..	2,636	920	1,462
		2nd Dose	..	..	1,285	699	1,099
		3rd Dose	..	..	406	597	1,008
		Boosters	..	..	1,127	623	355
Poliomyelitis Immunisation	{	1st Dose	..	..	54,089	53,627	59,278
		2nd Dose	..	..	40,326	51,887	57,565
		3rd Dose	..	..	32,054	51,144	57,369
		Boosters	..	..	27,965	19,407	47,215
Free Powdered Milk Distribution:								
1. Milk to antenatal mothers (No. of mothers)	..			..	4,587	5,161	4,704
2. Milk to children (No. of children)	..			..	92,655	77,100	9,131
3. Total Amount of Powdered Milk (No. of lbs.)	..			..	97,247	82,261	92,013
4. Skimmed Milk (No. of lbs.)								
to Mothers	..	..	..	..	16,864	25,087	8,078
to Children	..	..	..	..	2,725	3,940	294
Total No. of lbs.	..	..	..	..	19,589	29,027	20,319

Chapter Eleven

TRAINING AND HEALTH EDUCATION

INTRODUCTION

SINCE the establishment of the Training and Health Education Branch in November 1963, it has been under the charge of a Senior Health Officer.

Its functions are divided into three Units — namely, Training Unit, Health Education Unit and Special Services Unit.

During the year, in spite of staff changes, there has been an increased tempo in the Branch's activities, particularly in the functions of the Training Unit and the Special Services Unit.

TRAINING UNIT

The Training Unit is responsible for: (a) the training of Public Health Inspectors; (b) the training of Public Health Nurses; and (c) in-service training courses for Public Health Auxiliaries and Ancillaries.

Its facilities (particularly as a resource department) are also available to other training institutions and its staff are involved in assisting with the teaching of Public Health carried on in these institutions. In connection with such Public Health teaching, seminars and symposiums are arranged from time to time.

(a) *Training of Public Health Inspectors.*—Training of Public Health Inspectors, being one of the oldest courses of training in Singapore has been carried out since 1921. This training is done under the auspices of the Royal Society for the Promotion of Health in London.

Consequently, the Overseas Examination Board for this region has also functioned continuously since its inception in 1921 except for a short period of interruption due to the Second World War (1942–46), and for a brief period (1951–52) when staff shortages made it impossible to run the course. From 1958 onwards the Training Centre was established at the Institute of Health.

Since the establishment of the Public Health Inspectors' Training School in January 1959 in Kuala Lumpur on the same lines as the Training Centre in Singapore, courses and examinations for the Public Health Inspectors have been held simultaneously in Singapore and Kuala Lumpur.

The 36th session of the Royal Society of Health Course for Public Health Inspectors in Singapore commenced on 11th January, 1965, and ended on 30th October, 1965. The course was of ten months' duration. Ten candidates were admitted for training during the year under review. Of these students, five were from the States of Malaya, one from Kuching, Sarawak (Colombo Plan) and the remaining four from the Ministry of Health, Singapore.

All the ten students at the Singapore Centre together with 24 students from the Kuala Lumpur Centre sat for the Final Examination which was held simultaneously at both Training Centres, from the 8th to 17th November, 1965. Results are pending ratification by the Council of the Royal Society of Health in London.

(b) *Training of Public Health Nurses.*—The Public Health Nursing Course of ten months' duration leads to the Certificate of the Royal Society of Health for Health Visitors and School Nurses. Such a course was first held in Penang in 1955.

In 1958 the first Public Health Nursing Course commenced in Singapore under the direction of a World Health Organisation Public Health Nurse Educator at the Institute of Health. The Public Health Nursing School was shifted from Penang to Kuala Lumpur in early 1963. Since then two courses for Health Visitors and School Nurses Certificate (one at Singapore and the other at Kuala Lumpur) are being conducted annually at both Centres.

The 6th session of the Public Health Nursing Course in Singapore started on 20th April, 1964 and ended on 19th February, 1965. This was attended by 16 candidates, 14 of whom sat for the Final Examination from 15th to 19th February, 1965. The results were as follows:

Eight passed, five failed, and one withdrew during the examination. Among the eight successful candidates was a Colombo Plan student from Thailand.

A re-examination was held in Singapore for the six unsuccessful candidates, from 12th to 16th July, 1965. Five more were successful in the re-examination.

The results of the Health Visitors' and School Nurses' Examination held in Kuala Lumpur, from 6th to 10th December, 1965, in which there were 20 candidates, were processed by the Training Unit and circulated to members of the Examination Board for Malaya and Singapore. These results are subject to ratification by the Council of the Royal Society of Health in London.

The 7th session of the Public Health Nurses Course in Singapore commenced on the 26th April, 1965, and is scheduled to end on 26th February, 1966. 17 candidates are attending the course, two of whom are Colombo Plan Scholarship students from Sabah and Sarawak. All the 17 candidates will be sitting for the Final Examination in Singapore, from 19th February, 1966.

(c) *In-service Training of Ancillary Public Health Personnel.*—In keeping with the Ministry of Health's policy of improving discipline and technical efficiency of the staff, several in-service training courses were commenced and conducted during 1965:

- (i) A 6-month course lasting from 4th January, 1965, to 14th June, 1965, was conducted for five Probationary Technical Subordinates. At the end of this course, an examination consisting of two written papers — one practical and one oral — was held on 28th and 29th June, 1965. All the candidates were successful.

- (ii) The first Orientation Course for all Public Health Auxiliaries was held at the Health Education Centre at No. 2, College Road. This course has its primary objective in starting new workers coming into the Public Health Division “on the right foot” — hence the “Orientation Course”. Ten Probationary Public Health Inspectors and 20 Public Health Assistants attended this first course which was of five weeks’ duration, commencing on 19th July, 1965, and ending on 21st August, 1965. A written examination was held at the end of the course. Only two out of 30 candidates failed.
- (iii) The second Orientation Course for Public Health Assistants was held at the Health Education Centre at No. 2, College Road. Altogether 35 Public Health Assistants attended the course which was of four weeks’ duration, commencing on 25th October, 1965, and ending on 20th November, 1965. At the end of the course the students were also required to do a special “Markets” survey.
- (iv) A Refresher Course for Public Cleansing Inspectors commenced on 6th December, 1965, and ended on 18th December, 1965. This course, which was of two weeks’ duration, was attended by 11 Public Cleansing Inspectors. Judging from the candidates’ performance and comments, it has achieved to a considerable extent a sense of discipline among the workers.

Public Health Surveys by Public Health Personnel under Training.—Two surveys were carried out by the Public Health Personnel under training as part of their practical training:

- (i) A Cleansing survey of selected areas in the City was carried out from 26th August, 1965, to 10th September, 1965, by 30 students who completed the first Orientation Course.
- (ii) A “Markets” survey was carried out by 35 Public Health Assistants from 29th November, 1965, to 2nd December, 1965, on conclusion of the second Orientation Course.

These surveys not only serve as a useful exercise for the Public Health Auxiliaries under training, but will also provide useful data for the department.

HEALTH EDUCATION UNIT

This Unit is responsible for general dissemination of health education to the public and also to the ancillary health staff. This is done through participation of Health Education personnel in training and refresher courses in health education for various categories of health personnel such as midwives and nurses, who in turn will disseminate health knowledge to the public with whom they come into contact. The following are the work done by this Unit in the course of the year.

(a) *Midwives' Refresher Course*.—This course was first started in 1962 and consisted of eight sessions of 2 hours' duration each of which were devoted to principles and practice of health education. These sessions were held at No. 2 College Road, normally on a Wednesday afternoon. Four such courses were held in the course of the year.

(b) *Public Health Nurses' Refresher Course in Health Education*.—This course was first started in 1964 and is designed as a refresher course in public health nursing and health education for health nurses.

(c) Aside from the part-time course in health education the Health Education Unit also assists the Training Unit in its programmes for "orientation" courses for Public Health Assistants, and the Royal Society of Health Courses for Public Health Inspectors and Health Visitors.

(d) *Film Shows*.—As part of the general programme in health education for the public, 96 film shows on various health subjects, particularly maternal and child health work, were given during the year. Most of these film shows were held during working hours, with the exception of only four which were given in the evenings at the request of the Senior Health Officer in charge of Quarantine and Epidemiology and the Health Officer in charge of Katong District for special audiences.

Film shows were usually held at the Maternal and Child Health Clinics while some were held at Community Centres. Shows were also given to school children attending the School Health Clinic at the Institute of Health once a week.

(e) *Health Education and Diphtheria Campaign by the Maternal and Child Health Service*.—In response to a request from the Senior Health Officer in charge of Maternal and Child Health Services, the Unit assisted in the publicity campaign in order to get more children to come forward for diphtheria inoculation. Liaison was also established with the Ministry of Culture for this campaign, which lasted from January to June 1965.

(f) *Preparation and Distribution of Health Education Material*.—During the year various health education material were prepared and printed.

(i) *Film Strips* — Two film strips were made, the subjects of which were: Immunisation; Dental Health "The Toothbrush Way".

(ii) *Photographs* — A considerable amount of photographic material on different aspects of health was also produced during the year. Photographic materials were usually produced either at the request of Health Officers of the department for the purpose of records, or as supporting material for seminars and scientific meetings — e.g.:

Photographs showing industrial estate at Jurong and
Redhill Estate.

Breeding places of mosquitoes at Jurong and Bukit Timah.

Typhoid cases in Singapore.

- (iii) *Posters and Pamphlets* — In preparation for the Government's take-over of Family Planning work in Singapore, a poster on Family Planning and a leaflet on the same subject were also prepared and printed for use at all Maternal and Child Health Clinics.

(g) *Loan Service*.—All health education materials are available to schools/organisations who are interested and at specific requests from them supplied for their use. Various health films were also on loan to organisations/sections such as School of Nursing, General Hospital; School of Nursing, Kandang Kerbau Maternity Hospital; School of Dental Nursing; School of Hygiene, R.A.F., Seletar and School of Hygiene, R.A.F., Tengah. These films were on subjects such as — (i) Circulation of the Blood; (ii) Digestion; (iii) Drug Addiction; (iv) Child Birth.

Other visual aids — e.g., film strips and flannelgraphs were on loan to organisations who were interested.

SPECIAL SERVICES UNIT

(a) *World Health Day*.—World Health Day as usual fell on 7th April this year. A celebration was held at the Lecture Theatre, Department of Social Medicine and Public Health to discuss the theme "Smallpox — Constant Alert". The Unit organised a short scientific meeting and put up a special exhibition for the occasion. The meeting was well attended by various categories of professional staff and relevant heads of Government departments.

(b) *Exhibition*.—The Unit assisted in the Blood Donation Campaign held in January 1965. A booth depicting the wastage of blood through road accidents and an appeal for donors was put up by the Unit.

(c) *Survey of Anti-Mosquito Organisation*.—On 12th December, 1964, the Permanent Secretary, Ministry of Health, requested Professor M. J. Colbourne, Professor of Social Medicine and Public Health, University of Singapore, to conduct an enquiry into the Anti-malaria/Anti-mosquito Services in the Republic. The terms and reference of the enquiry were:

- (i) to examine the City and Rural Anti-malaria/Anti-mosquito Services in Singapore in respect of organisation, administration, staffing, operational methods and techniques and operational efficiency;
- (ii) in the light of the findings, to make recommendations as to whether changes are necessary in respect of — Anti-malaria and Anti-mosquito Services in the Republic. And if so, to recommend changes that are necessary for ensuring an improvement in Anti-malaria/Anti-mosquito Services in Singapore.

A preliminary enquiry was made in January 1965 and the major work done from March to June 1965. The Senior Health Officer (Training and Health Education) was designated as the liaison officer of the Ministry of Health and to assist Professor Colbourne in this enquiry.

The first few weeks were spent in collecting basic information concerning the Anti-malaria/Anti-mosquito Services from memoranda supplied by various units and by actual field visits to the units together with Professor Colbourne.

Professor Colbourne's report was finally published in July 1965.

(d) *Family Planning*.—In March 1965 the Minister for Health, at the request of the Singapore Family Planning Association, set up a Review Committee to go into the question of transfer over of responsibilities on family planning activities in Government institutions from the Singapore Family Planning Association to Government.

By 29th June, 1965, an unanimous report was submitted by the Review Committee which, *inter alia*, recommended to Government to take over all responsibilities for clinical work, research and publicity in the field of Family Planning with effect from the 1st October, 1965.

In September 1965 the Minister for Health published a White Paper on Family Planning laying down the policies of Government in regard to this important subject and announcing his intention of setting up a statutory board — namely, the Singapore Family Planning and Population Board with the Deputy Director of Medical Services as Chairman and the Senior Health Officer (Training and Health Education) as its Executive Secretary of the proposed Singapore Family Planning and Population Board.

It was also stated that the Training and Health Education Section was to regard the Family Planning and Population Board and its 5-Year Plan as one of its major special services projects.

In accordance with this policy, the Acting Senior Health Officer (Training and Health Education) was instructed to familiarise himself with some aspects of Family Planning activities in three countries — namely, Korea, Taiwan and Hong Kong while on his way back from attending the 16th session of the W.H.O. Regional Committee held in Seoul, Korea in September 1965. The whole mission took one month.

Since the preliminary organisational work in all the varied aspects for the take-over of Family Planning activities from the Singapore Family Planning Association has proceeded smoothly with the target date of 1st January, 1966, as the actual day when Family Planning work in all Singapore Family Planning Association clinics in Government institutions are to be transferred over to Government administration. By the last day of 1965 all such preliminary work had been completed and a successful and smooth take over of Singapore Family Planning Association activities in 25 Maternal and Child Health Clinics was effected.

GENERAL

Mrs. Louisa Haas, W.H.O. Adviser on Health Education, arrived in August 1965, and has been orientating herself on local organisation and problem, and has also participated in our programmes.

The staffing position in the Branch was a "skeletal" one. However, this is expected to improve, as a trainee will be selected by the Public Service Commission to undergo one year's training in Health Education in the United States of America and probably be available for service in 1967.

In spite of shortage in the staffing position, the tempo of work in the Branch, particularly in training programmes and in special services, was stepped up. The comparatively small staff in the Branch lived up to expectations and thanks to their extra efforts, a reasonably good standard of work is maintained.

Chapter Twelve

HAWKERS AND MARKETS DEPARTMENT

GENERAL

THIS department deals with the licensing and control of hawkers, the supervision of public markets, licensing and control of private markets including private lands used for the accommodation of static hawkers. A Superintendent is in charge of the Department.

Administration, Licensing and Financial Sections.—The staff consists of:

- (i) Superintendent.
- (ii) Two Assistant Superintendents.
- (iii) Executive Officer (Licensing).
- (iv) Two Higher Clerical Officers.
- (v) 12 General Clerical Officers.
- (vi) Nine General Clerical Assistants (one post vacant).
- (vii) Four Typists.
- (viii) One Office Boy.
- (ix) Three Messengers.
- (x) One Office Watchman.

Issue of Licenses and Number of Hawkers.—The hawker problem continues to be complicated and delicate; there being an estimated total of about 50,000 licensed and unlicensed hawkers. Of this number, 5,622 are licensed, giving an approximate ratio of 1 to 10 of licensed to unlicensed hawkers. Table 57 below gives the number of licensed hawkers from 1961 to 1965 for both the City and Rural Areas.

TABLE 57

NUMBER OF LICENSED HAWKERS

				1961	1962	1963	1964	1965
Itinerant:								
City Area	..	..	..	345	441	530	516	653
Rural Areas	..	..	..	—	—	78	75	77
Day Street Pitches:								
City Area	..	..	..	2,586	2,515	3,095	3,383	3,497*
Rural Areas	..	..	..	271	331	306	369	318
Night Street Pitches:								
City Area	..	..	..	969	925	971	1,029	1,014†
Rural Areas	..	..	..	—	—	—	—	63
			Total	4,171	4,212	4,980	5,372	5,622

*Excluding 119 Licences cancelled during the year.

†Excluding 87 Licences cancelled during the year.

HAWKERS SECTION

The staff consists of: (i) two Divisional Hawkers and Markets Inspectors; (ii) four Senior Hawkers and Markets Inspectors (vacant); (iii) 45 Hawkers and Markets Inspectors (three posts vacant); (iv) 28 Assistant Hawkers and Markets Inspectors (one post vacant); (v) four Assistant Hawkers Inspectors (Rural) (one post filled by Daily Rated personnel and three posts vacant).

Enforcement.—During the year, enforcement action was taken to clear hawkers from the following street and hawking sites, either due to their causing serious obstruction or because the sites were required for carrying out road widening schemes, etc. Wherever possible, alternative sites were provided for these hawkers:

- (i) Chung Cheng High School Neighbourhood,
- (ii) outside Beo Crescent Market,
- (iii) Anson Road,
- (iv) outside Queenstown Neighbourhood III Market,
- (v) Serangoon Garden Way Pasar Malam Site,
- (vi) Pesiaran Keliling,
- (vii) Holland Village,
- (viii) Upper Serangoon Road,
- (ix) Boon Teck Road,
- (x) Sungei Road,
- (xi) Johore Road,
- (xii) River Valley Road,
- (xiii) Simon Road,
- (xiv) Holland Road,
- (xv) outside Rayman Market,
- (xvi) Collyer Quay,
- (xvii) outside St. Michael's Market,
- (xviii) Prince Edward Road,
- (xix) Kensington Park,
- (xx) Angullia Park,
- (xxi) Commonwealth Crescent Pasar Malam,
- (xxii) Loke Yew Street,
- (xxiii) McCallum Street.

New Specified Sites for Hawkers.—Hawkers selling at the following new sites and markets were issued licences during the year:

- (i) Loke Yew Street,
- (ii) River Valley Road Backlane,
- (iii) Rayman Market Extension,
- (iv) Upper Serangoon Road Market Extension,
- (v) Holland Road Market Extension,
- (vi) Beo Crescent Market,
- (vii) Queenstown Neighbourhood Market.

New Pasar Malam Areas.—No new pasar malams were permitted during the year. The one at Serangoon Garden Way was moved to Lorong Chuan during the second quarter of the year.

Complaints.—During the year, a total of 638 complaints were received concerning nuisances, obstruction, construction of unauthorised structures, indiscriminate depositing of refuse, etc., by hawkers and these were promptly dealt with by the department.

Prosecution.—During the year, Court action was taken in 5,009 cases, as compared to 6,537 cases last year, and a total of \$49,108 was collected in fines, as compared to \$33,363 collected last year.

NUMBER OF LICENCES ISSUED FOR STREET PITCHES AND ITINERANT HAWKERS IN RURAL AREAS

			<i>Street Pitches</i>	<i>Itinerant Hawkers</i>
(i) Bukit Panjang District	..	..	83	16
(ii) Katong District	..	..	145	9
(iii) Serangoon District	..	..	153	52
		Total	381	77

MARKETS SECTION

The staff consists of:

- (i) one Divisional Hawkers and Markets Inspector (vacant),
- (ii) three Hawkers and Markets Inspectors (vacant),
- (iii) one Markets Inspector (Rural),
- (iv) 43 Market Overseers (16 posts vacant),
- (v) six Market Overseers (Rural) (five posts filled by Daily Rated personnel, one post vacant),
- (vi) 77 monthly rated Watchmen (seven posts vacant),
- (vii) four Mandores,
- (viii) 235 Labourers (four posts vacant),
- (ix) seven daily rated Watchmen (Rural),
- (x) one Mandore (Rural),
- (xi) 23 Labourers (Rural).

Total 301 with 32 vacant.

Control of Markets.—(a) There are now 35 markets in the City Area and eight markets in the Rural Areas. They include the new market at Beo Crescent, officially opened by Member of Parliament, Madam Chan Choy Siong on 24th April, 1965, and the new market at Queenstown Neighbourhood III, officially opened by the Parliamentary Secretary (Health), Mr. Sia Kah Hui on 29th May, 1965.

(b) During the year, the following works were carried out in various markets:

- (i) Lim Tua Tow Market: Provision of additional lights and ventilation.
- (ii) Lorong 3 Market: Wire Mesh fencing around market and paving of open space.
- (iii) Clyde Terrace Market: Resurfacing of cement flooring and repairs to roof of fish auctioning yard and Fish Section.
- (iv) Beo Crescent Market: Provision of four additional gates.
- (v) Grange Road Market: Major renovation work.
- (vi) Queenstown Neighbourhood III Market: Resiting of lavatory doors.
- (vii) Telok Ayer Market: Major renovation work.
- (viii) Kandang Kerbau Market: Major repairs to collapsible gates.

(c) During the year 5,646 licences were issued for market stalls in the City Area, of which 139 licences were cancelled during the year, leaving a total of 5,507 licences in force at the end of the year.

(d) A further 1,166 licences were issued in the Rural Areas.

(e) Eight licences for private markets were issued in the City Area and 13 in the Rural areas, making a total of 21 private market licences issued during the year.

(f) A total of 65 licences were issued for the auction of fish at two markets and the commission collected was \$136,350.31.

Collection of Revenue.—Total revenue collected by the department amounted to \$1,779,092.78 of which \$1,587,426.78 came from fees collected in the City Area and the remaining \$191,666 from the Rural Areas.

The fees consisted of:

- (i) street pitches licence fees;
- (ii) market stalls licence fees;
- (iii) shelter stalls licence fees;
- (iv) private market licence fees;
- (v) five per cent commission on fish auction sales at Ellenborough and Clyde Terrace Markets;
- (vi) itinerant hawkers licence fees.

New Temporary Office.—The department began to shift to its temporary office at the former Malay Girls Craft School, Scotts Road, on 29th April, and the operation was completed the following day.

Reorganisation of the Department.—(a) During the year, the department was reorganised into three Divisions, each under a Divisional Inspector, namely: (i) Investigation Division; (ii) Enforcement Division; (iii) Supervision Division.

(b) In addition four Special Squads were formed to take charge of the following, each under a Senior Inspector: (i) Rehabilitation, (ii) Security, (iii) Prosecution, (iv) Labour.

(c) The functions of the department under the above arrangement have been carried out satisfactorily.

(d) The aim of the reorganisation now is to make all hawkers, including their assistants, apply for registration, only after which licences would be issued to them. This process would be carried out gradually constituency by constituency.

(e) One of the main tasks of the department in the new year would then be to exert all its efforts in implementing the above objective.

Licensing Committee.—(a) The department Licensing Committee was formed during the year and the first meeting was held on 24th March, 1965, with the Political Secretary (Health) as Chairman, the other members being Mr. S. Rajoo, Member of Parliament for Farrer, Officer-in charge (Reorganisation), Superintendent, Hawkers and Markets, Assistant Superintendent (Administration), Assistant Superintendent (Licensing), Executive Officer (Licensing), the three District Officers and Government Members of Parliament or their representatives concerning matters arising within their respective constituencies.

(b) The object of the Committee is to determine the procedure by which balloting of stalls and pitches is held and generally to deal with all matters arising out of the issue of licences.

(c) The Committee held a total of eight meetings during the course of the year since its inception in March.

(d) This Committee has done a good job in helping in the smooth running of the department.

Chapter Thirteen

OTHER SERVICES UNDER PUBLIC HEALTH DIVISION HEADQUARTERS

THE following Sections are directly under the Public Health Division Headquarters administration:

- (1) Public Health Engineering Unit.
- (2) Cemeteries and Crematoria Unit.
- (3) Labour and Welfare Unit.
- (4) Transport Centre.

PUBLIC HEALTH ENGINEERING UNIT

1965 was a very active year for the Public Health Engineering Unit, especially in environment sanitation activities. The Unit assisted in the processing for development projects, and in providing technical advice to the Sectional Heads of the Public Health Division, in engineering aspects of Environmental Health work.

(a) *Staffing*.—This Unit is under the charge of a Public Health Engineer assisted by three Supervisors of Public Health Works, three senior grade Technical Subordinates, and ten Technical Subordinates, with a labour force of 105 men. While this Unit is attached to the Public Health Division Headquarters, it functions in close liaison with the Senior Health Officer (Environmental Health) and the Health Officer in the Rural districts. An organisational Chart is attached in Appendix.

(b) *Kampong Sanitation*.—The improvement of environmental conditions in various kampongs by construction of proper drains including the major repairs and construction of A.M. drains, rural latrines, stand-pipes aprons, wells, and bin centres is a responsibility of the Unit. Environmental sanitation improvements in 27 kampongs were carried out in 1965 and about \$76,000 in labour and materials were spent for such work.

(c) *Wells, Water Tanks and Pumping Installation in Rural Areas*.—The Unit maintains and operates a total of seven small water supply schemes for small kampongs in the Rural areas including one such installation in Pulau Tekong Besar. These small water supply schemes are provided with intake-wells, supplied by sub-soil water and fitted with pumping units to pump water to elevated storage tanks. Water from these tanks are then distributed to the kampongs, through supply pipes and communal stand-pipes.

(d) *Minor Works*.—Minor works were handled by the Public Health Engineering Unit using mainly the available tradesmen and departmental labour attached to this Unit. About 250 requisitions were carried out by the

Unit except repairs necessitating specialist contractors attending like electrical work and repairs to roofs.

(e) *Public Cleansing*.—The Unit completed the preparation of the scheme for the proposed project for a 100-Ton Urban Garbage Composting Plant at the Redhill Industrial Estate. Specifications, Bills of Quantities, and Conditions of Contract were made ready for calling of Tenders early next year.

(f) *Malaria Control in Jurong*.—The preliminary phase for the control of malaria in the Jurong Industrial area had been assigned to this Unit. The rapidly changing topographical features especially from the 16th milestone Boon Lay Road to Tanjong Kling, due to the intensive and filling of swamps, required constant surveillance and adequate coverage of the area by heavy oiling.

The dammed up upper reaches of the Sungei Jurong was still brackish and oiling from a boat to prevent the breeding of *A. sunaicus* had to be continued. There were 27 *Anopheles* larval survey conducted by the A.M. Surveillance Squad but no dangerous *Anopheles* larvae were found in this Jurong Industrial area. About 26,344 gallons of anti-malarial oil were used and the cost of oil and labour in 1965 amounted to \$39,810.39.

(g) *Training in Public Health Engineering*.—A Colombo Plan Fellowship was awarded to one of the Supervisors of Public Health Works for training in United Kingdom as a Public Health Engineer.

CEMETERIES AND CREMATORIA UNIT

There are within the Republic of Singapore approximately 471 licensed/registered burial and burning grounds. Of these approximately 182 are within the city area and 289 in the Rural Area. Only one burial ground, Cheang Hong Lim Burial Ground, Stirling Road, is known to have been closed as the land has been acquired by the Housing and Development Board for development. With the re-organisation of the Cemeteries Section in 1966, it is hoped to review the position of all burial grounds and to ascertain the number which are insanitary and no longer required with a view to recommending their closure. There are 19 private burial grounds within the city area still in use.

The latest Government Burial Ground at Chua Chu Kang comprising 1,700 acres caters for all religious denominations. At present only about 1/10th of this cemetery has been developed and is being used by the Hindu, Buddhist and Bahai sections as well as by non-Christian Chinese. The Muslim Section will not be used until sometime in 1988 as the life of this burial ground has been extended by utilising space in between existing plots for burials.

Details of Government Burial Grounds/Burning Grounds and Crematoria are indicated hereunder:

(a) *Chua Chu Kang Cemetery*, Chua Chu Kang Road, 15½ m.s.: This cemetery caters for all denominations and has been divided into: (i) Chinese:

Section, (ii) Hindu Section, (iii) Buddhist Section, (iv) Bahai Section, (v) Christian Section, (vi) Muslim Section.

(i) *Chinese Section*

No. of plots available as at 1st January, 1965—

Paying Section	..	..	..	..	2,850
Free Section	..	..	..	..	3,270
No. of burials during 1965	..	..	..	..	3,011
No. of plots available at 31st December, 1965	..	..	..	..	3,109

Further development is in progress. Of the eight acres set aside by Government for the re-interment of exhumed remains of deceased persons buried in licensed/registered burial grounds acquired by Government for development, road alignment, etc., half of this area has been developed and marked out.

A total of 2,800 exhumed remains have been re-interred in this section during the year.

Site clearing in Block 3 to provide for 4,000 graves has been completed.

(ii) *Hindu Cemetery*

No. of plots available as at 1st January, 1965—

Paying Section	..	..	..	..	1,031
Free Section	..	..	..	..	553
No. of burials during 1965	..	..	..	..	328
No. of plots available at 31st December, 1965	..	..	..	..	1,256

(iii) *Buddhist Cemetery*

No. of plots available as at 1st January, 1965—

Bodies	..	..	..	..	1,134
Ashes	..	..	..	..	998
No. of burials during 1965	..	..	..	..	10
No. of plots available at 31st December, 1965	..	..	..	..	2,122

(iv) *Bahai Cemetery*

No. of plots available as at 1st January, 1965—

Paying Section	..	..	..	..	179
No. of burials during 1965	..	..	..	..	—
No. of plots available at 31st December, 1965	..	..	..	..	179

(v) *Christian Section*.—This section has been cleared of squatters and as at present under development by stages. Construction of Quarters for the staff, Chapels and sanitary installations are in progress. It is anticipated that these would be completed in the latter part of 1966. The Christian Section would be brought into use as soon as all available land at Bidadari is used up.

(vi) *Muslim Section*.—It is not envisaged to develop this section at the moment as the Bidadari Muslim Cemetery has a life span of approximately another 20 years.

(b) *Bidadari Christian Cemetery, Upper Serangoon Road, 4 m.s.:*

Area—approximately 55 acres (for all Christian denominations)

No. of plots available as at 1st January, 1965—

Paying Section: Prot.	..	..	..	..	134
F.R.C.	..	..	..	..	582
P.R.C.	..	..	..	..	224
Free Section	..	..	..	..	Nil
No. of burials during 1965	..	..	..	..	795
No. of plots available at 31st December, 1965	..	..	..	..	145

Since the Christian Section of the new Chua Chu Kang Cemetery was not ready to receive burials during 1965, a review of the space availability for the paying section for protestant burials at the Bidadari Cemetery was made, and it was found that there were many areas such as corner plot, disused footpaths and exhumed areas which could be used for further interment. Space for a total of 134 plots were found in such plots and are being utilised for burials at present.

(c) *Bidadari Muslim Cemetery*, Upper Serangoon, 4 m.s.:

Area—approximately 60 acres.

No. of plots available as at 1st January, 1965—

Paying Section	..	..	..	37,327
No. of reserved plots	..	..	..	130
No. of burials during 1965	..	..	..	1,293
No. of plots available at 31st December, 1965	..	..	..	36,034

The cemetery was completely buried in 1955 and current burials are taking place between grave plots and is expected to last until 1988 after which burials would take place in Chua Chu Kang Cemetery (Muslim Section) which is at present occupied by squatters and undeveloped.

(d) *Hindu Cemetery and Burning Ground*, Upper Aljunied Road:

Area—approximately 24 acres.

The cemetery is completely buried in but is currently used for cremation of Hindu and Sikhs.

No. of cremations during 1965	245
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Singhalese Buddhist Cemetery

Area—approximately 6½ acres.

No. of plots available as at 1st January, 1965—

Paying section	..	..	..	1,150
Free Section	..	..	..	128
No. of cremations during 1965	..	..	..	8
No. of burials during 1965	..	..	..	5
No. of plots available at 31st December, 1965	..	..	..	1,273

(e) *Infectious Disease Burial Ground*, Upper Serangoon Road, 5 m.s.:

Area—approximately 6 acres.

No. of plots available as at 1st January, 1965	..	..	..	3,459
No. of burials during 1965	..	..	..	Nil
No. of plots available at 31st December, 1965	..	..	..	3,459

The burial ground is used for burials of dangerous infectious disease cases of all races.

(f) *Bukit Timah Road Christian Cemetery*, Bukit Timah Road, 2 m.s.:

Area—approximately 22 acres.

This cemetery has been closed to current burials since 1909 but there are available 118 reserved plots or family burial ground held under 999 years lease. The last burial was on 29th November, 1961.

No. of burials during 1965	Nil
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(g) *Bukit Brown Chinese Cemetery*, Kheam Hock Road:

Area—approximately 175 acres.

This burial ground has been closed to current burials since 1945 but there are available about 1,530 reserved plots or family burial grounds held under 999 years lease.

No. of burials during 1965	..	..	..	31
No. of reserved plots as at 31st December, 1965	..	..	..	1,499

(h) *Temporary Chinese Cemetery War Emergency Burial Ground*, Coronation Road:

Area—approximately 8 acres.

This cemetery has been closed to current burials since May 1947.

(i) *Mount Vernon Crematoria*, Upper Aljunied Road: Since the Crematoria came into operation in June 1962, the number of cremations has steadily increased. Sikh corpses which were previously cremated by firewood at the Hindu burning ground are now cremated at the Mount Vernon Crematoria. Cremations among the Christian and Non-Christian Chinese Community are also becoming popular.

No. of cremations during 1965	198
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Exhumations.—Two mass exhumation exercises were carried out during the year. One was at Bukit Brown Cemetery where the road re-alignment of Lornie Road carried out by the Public Works Department affected a small section of the cemetery necessitating 235 exhumations. The other was at the private burial ground, Cheang Hong Lim Cemetery at Stirling Road which was acquired by the Housing and Development Board for development. The number of exhumations was 2,817. In addition, there were 30 exhumations from other private cemeteries.

Of the above 3,082 exhumations, a total of 2,800 were re-interred at Chua Chu Kang Cemetery. The remainder were re-interred in private cemeteries.

Revenue:			\$	c.
(a) Interment Fees (including fees for exhumation and erection of tombstones, kerbs, etc.)	..	..	34,694	50
(b) Cremation Fees	..	..	13,487	00

LABOUR AND WELFARE UNIT

Since the issue of Treasury Circular No. 25/64 dated 24th October, 1964, the Labour and Welfare Unit was renamed as Personnel, Labour and Welfare Unit, Public Health Division, Ministry of Health. There has been no change in the duties.

The strength of the staff of the Personnel, Labour and Welfare Unit during 1965 was, as follows:

Senior Executive Officer, as head of the Unit.

One Executive Officer, Labour.

One Executive Officer, Welfare.

Two Clerical Officers.

Two Clerical Assistants and four Labourers' Lines Supervisors.

In addition to this, there is one post of Executive Officer which had been provided for in the Estimates during 1964 but to this date it has not been filled.

(a) *Establishment of Daily-Rated Employees.*—The following 11 Departments under the Public Health Division employed approximately 5,130 daily-rated employees:

Cleansing (City)	..	..	..	..	2,229
Serangoon District	..	..	..	..	548
Katong District	..	..	..	..	537
Bukit Panjang District	..	..	..	..	307
Hawkers and Markets	..	..	..	..	276
Anti-Mosquito (City)	..	..	..	..	676
Quarantine and Epidemiology	..	..	..	..	96
Public Health Engineering	..	..	..	..	101
Cemeteries and Crematoria	..	..	..	..	150
Southern Islands	..	..	..	..	54
Transport Centre	..	..	..	..	156

During 1965 a total of 238 daily-rated employees were recruited. 109 employees have left the service due to:

Resignation	..	..	..	..	26
Retirement	..	..	..	..	6
Death	..	..	..	..	7
Dismissal	..	..	..	..	11
Vacation of Services	..	..	..	..	56
Medical Grounds	..	..	..	..	3

(b) *Promotion of Daily-Rated Employees.*—There were 23 promotion interviews during the year to select candidates for promotion to the various grades of Mandore, Mason II, Drivers, etc. In addition to this, there were seven interviews to consider candidates for promotion in acting capacity in the grades of Mandore.

(c) *Discipline.*—With effect from 21st October, 1965, daily-rated employees (both integrated and Government) would be subject to a new Disciplinary Code issued under Treasury Circular No. 26/65. Prior to this date, Government daily-rated employees were governed by Discipline Rule provided under Chapter II of the Code of Wages and Conditions of Service for Daily-Rated Employees of the Government of Singapore, whereas integrated employees were then subject to discipline rule provided under Chapter II Part 7 of the City Council Manual of Instructions on Daily-Rated Employees.

During 1965, there were 93 cases of disciplinary inquiry. The decision taken on these cases were as follows:

					No. of Cases
Dismissal	..	..	..	..	11
*Suspension of duty	..	..	..	..	58
Written Warnings	..	..	..	..	24

*(Disciplinary action on suspension of duty under Section 4a or 5a of the Revised Disciplinary Code).

(d) *Quarters*.—A new Quarters Allocation Committee was formed during September 1965, to consider applications of daily-rated employees for Quarters. The Committee held 8 meetings during the 4 month period. Approval was given by this Committee for the allocation of 40 vacant quarters to the employees during the year.

(e) *Labourers' Co-operative Society*.—The name of the Society was changed from Government Health Department Labourers' Co-operative Credit Society Limited to be known as Government Public Health Division Labourers' Co-operative Credit Society Limited. This change was considered necessary in order to allow integrated employees to join the Society. Five existing by-laws of the Society were amended during 1965 so as to provide better facilities to members.

The membership position as at the end of 1965 was 330 as compared with 323 in 1964. The investment in gilt-edged security bonds has increased from \$58,500 to \$63,500.

The financial circumstances of the Society are shown here below:

FINANCIAL SUMMARY OF GOVERNMENT PUBLIC HEALTH
DIVISION LABOURERS' CO-OPERATIVE CREDIT SOCIETY
LIMITED FOR THE YEAR ENDED 31ST DECEMBER, 1965

				\$	c.
Post Office Savings Bank	..	..	..	814	92
Cash in Bank	..	..	..	3,797	70
Cash in Transit	..	..	..	6,468	26
Investments	..	..	..	63,530	75
Outstanding Loans	..	..	..	19,765	00
				<hr/>	<hr/>
				94,376	63
				<hr/>	<hr/>
Membership	..	..	..	330	
Total staff eligible for membership		..	..	5,130	

TRANSPORT CENTRE

The Transport Section continued its primary function of providing a central organisation for the control of the fleet of vehicles owned by the Public Health Division during the period under review, entailing the —

- (a) maintenance of a central depot at MacKenzie Road;
- (b) maintenance of sub-depots in the three Rural Districts and Emergency Cleansing Corps at Kolam Ayer Lane;
- (c) control of the staff, drivers and other employees attached to it; and
- (d) control of the expenditure provided for the maintenance of transport, wages and other expenditure in connection with the running of the Section.

(a) *Staff*.—(i) *Monthly-Rated Staff*.—The monthly-rated staff in its employ during the year at the central depot were as follows:

- one Engineer-in-charge (vacancy filled on 1st July, 1965);
- one Supervisor of Transport;

six General Clerical Officers;

three Clerical Assistants;

one Office Boy (called up for service with the Armed Forces from 28th August, 1964 onwards until further notice);

16 Drivers, General Purpose (five drivers were recruited during the 2nd half of the year; and
three Watchmen.

(ii) *Daily-Rated Staff*.—One lorry driver retired on 31st December, 1965. The total number of daily-rated staff excluding those in the three Rural Districts and Emergency Cleansing Corps Depot was 156.

(b) *Depots*.—There is a central depot at MacKenzie Road and three sub-depots in the Rural Districts and one at the Emergency Cleansing Corps depot at Kolam Ayer Lane; namely: (i) Central Depot, (ii) Sub-depot at Katong District, (iii) Sub-depot at Serangoon District, (iv) Sub-depot at Bukit Panjang/Jurong District, (v) Sub-depot Emergency Cleansing Corps at Kolam Ayer Lane.

(c) *Vehicles*.—During the spring cleaning campaign, contract lorries were used to clear the increased volume of refuse accumulated at Bin Centres. The total number of vehicles under the control of the Section was 260 vehicles (excluding 5 trailers). During the year, sixty-three new vehicles were purchased (only forty-seven delivered before the end of the year) of which thirty-seven new vehicles are meant for the Emergency Cleansing Corps, five for Jurong Development Scheme and twenty-seven for replacement of aged-old vehicles. Twelve old vehicles have so far been condemned.

(d) *General*.—A minor repair workshop and a servicing and greasing bay was established to deal with minor repairs and servicing of all vehicles of this Section. The workshop team consists of: one chargehand, seven motor mechanics, one welder, one wireman, two motor servicemen. The Section continued to supply petrol, oil and lubricants to vehicles of Kandang Kerbau Hospital, and the Abattoirs of the Primary Production Department.

Chapter Fourteen

THE CHUNG CHENG HIGH SCHOOL TYPHOID EPIDEMIC

ON 24th March, 1965, the Public Health Division received information that there were 7 clinical cases of typhoid fever; the cases were all male students attending the afternoon session of Chung Cheng School.

TABLE 58

NOTIFICATION OF CONFIRMED TYPHOID CASES BY DATE OF NOTIFICATION
AND SCHOOL DURING THE PERIOD 24-3-65 TO 24-4-65

<i>Date</i>		<i>No. of Cases Notified</i>	<i>Chung Cheng High School</i>	<i>Others</i>	<i>Remarks</i>
24-3-65	..	1	1	—	—
25-3-65	..	1	—	1	—
26-3-65	..	6	5	1	—
27-3-65	..	1	1	—	—
30-3-65	..	4	4	—	—
31-3-65	..	9	5	4	1 adult
1-4-65	..	12	10	2	—
2-4-65	..	3	3	—	—
3-4-65	..	9	8	1	—
5-4-65	..	22	15	7	3 adults
6-4-65	..	6	5	1	—
7-4-65	..	7	6	1	—
8-4-65	..	13	9	4	2 adults
9-4-65	..	9	4	5	2 adults
10-4-65	..	9	3	6	1 adult
14-4-65	..	1	1	—	—
17-4-65	..	6	1	5	1 adult
18-4-65	..	4	2	2	1 adult
20-4-65	..	1	—	1	Carrier (adult)
21-4-65	..	6	2	4	—
22-4-65	..	2	1	1	—
24-4-65	..	4	4	—	—
Total	..	136	90	46	12 adults

Summary:

90 Chung Cheng Students.

27 Other School Children.

12 Adults.

7 Others (under school age or not schooling).

The daily notification of cases shown in Table 58 indicates that as the outbreak developed it was not clear-cut in its epidemiologic picture; it did not appear that the cases were confined to the Chung Cheng School; there was the possibility that other schools were involved. It was also possible that adults were also involved. In fact the picture at the end of March 1965 taking the confirmed and "suspected" cases of Typhoid known to the health authorities was one of a massive outbreak over a widespread area. During the period 24th March to 24th April, 1965, 136 cases were notified; 98 from Chung Cheng School and 46 others (including 12 adults and 7 pre-school children).

By 28th March, there were 2 cases at other schools in the same area. As the outbreak progressed, more schools were involved. There were 27 cases in the 23 schools.

TABLE 59

CHUNG CHENG SCHOOL TYPHOID EPIDEMIC

List of other schools from which children were notified with typhoid during the period of the outbreak

28th March, 1965	{	Kong Wah School	..	..	1
		Yoke Eng School ..	..	..	1
30th March, 1965	{	Chong Hock School	..	..	2
		Bin Keng School, Pulau Ubin	..	..	1
		Silat School ..	..	..	1
1st April, 1965	—	Seraya School ..	..	..	1
3rd April, 1965	—	St. Stephens School	..	..	2
5th April, 1965	{	Chinese Kindergarten, Tras Street	..	..	1
		Outram Road School	..	..	1
		Bartley English School	..	..	1
8th April, 1965	—	Geylang Kindergarten	..	..	1
9th April, 1965	{	River Valley English School	..	..	1
		Tunsei Malay School	..	..	1
		Yoke Eng High School	..	..	1
10th April, 1965	{	Sin Min High School	..	..	1
		Pearls Hill School	..	..	2
		Fairfield School ..	..	..	1
		Kim Seng School ..	..	..	2
		Mattar School West	..	..	1
14th April, 1965	—	Kong Seng School	..	..	1
21st April, 1965	{	Guillemard School	..	..	1
		Hong Ban School ..	..	..	1
22nd April, 1965	—	St. Joseph's School	..	..	1

Summary:

23 schools. 27 cases.

Besides a general distribution of these cases all over the island, there was a concentration of a number of cases in three distinct geographical areas — in the Kim Seng Road/York Hill area, in the Duxton Road area and in the Jalan Eunus area. This latter concentration affecting many others besides Chung Cheng School students arose from secondary foci that were eventually controlled.

On 25th March one schoolboy from Chung Cheng School died of typhoid. The number of cases continued to build up. By Saturday, 26th March, there were over 20 confirmed and suspected cases of typhoid in hospital.

Absenteeism.—On the 31st of March another schoolboy died from the disease. This led to a panic reaction. The school with 3,500 students normally has a low absenteeism, about 30 to 40 students per day. On Monday, 29th of March, the first day after the news appeared in the Sunday papers, there were 125 absentees. On the 2nd of April, which was after the second death was reported in the press, 273 absentees were reported at the school.

Epidemiological investigations were based on the grounds that the outbreak was a massive water-borne outbreak confined to a source at or connected with the school. The possibility that a larger epidemic on an island-wide scale was not excluded.

The Public Health Inspectors did an initial survey of food stalls and school hawkers at Chung Cheng School. This was done unobtrusively on the first day notification was received. There were 22 food stalls in 3 separate tuckshops (of varying sanitary standards); 5 hawkers were outside the school. In all, 42 persons connected with the sale of food at or outside the school were all checked. All the 42 persons, who were food handlers at the school, were subject to full medical examination, including stool examination (for culture) and blood examination (for culture and Vi Antigen). After these 42 food handlers were screened with negative results, the examination was extended to cover the families. The sanitary condition of their houses where food preparation for sale in the school was done was also checked. 159 persons were so examined, with negative results.

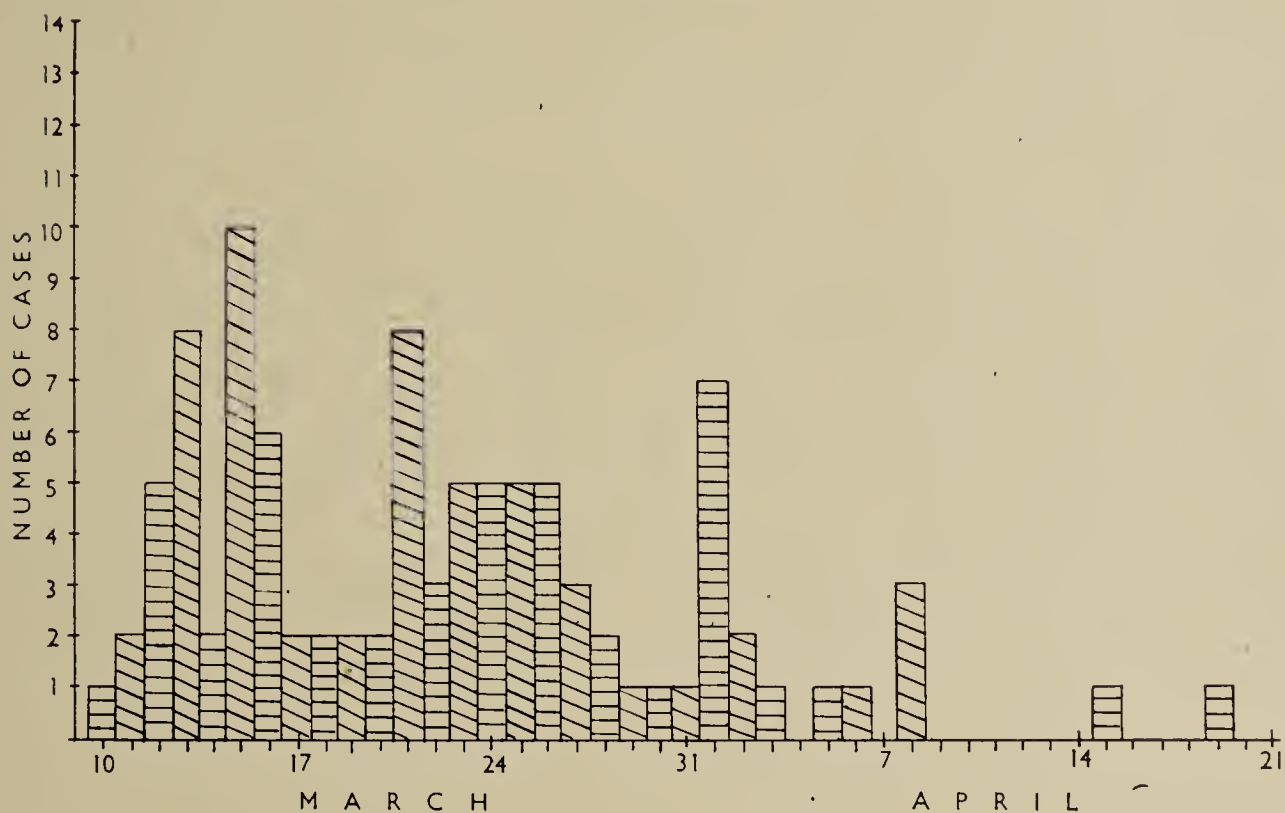
The prescribed departmental infectious disease investigation of all notified cases was done. In addition, because of the epidemic situation, detailed studies were carried out regarding each of the food hawkers, the sanitary conditions of the houses, the water supply, the sort of food they prepared, how the food was prepared, where the foodstuffs were obtained, etc. Ice factories were checked and one particular factory in Kallang came under strict surveillance, as many hawkers reported obtaining ice from this factory. All the factory workers were medically screened.

As the epidemiologic pattern of cases was suggestive of *massive infection from a single source*, control measures were initially directed to a total ban on the sale of food and drinks at the school, the suspicion being that the source was among these food handlers. It was anticipated that if this were so, the epidemic would burn itself out within 3 to 4 weeks unless secondary cases kept the outbreak alive. Subsequent events showed that as the source of the outbreak had eliminated himself from the school (as a result of acute illness) the epidemic did burn itself out. The chart below demonstrates this.

TABLE 60

TYPHOID OUTBREAK — CHUNG CHENG HIGH SCHOOL —
MARCH TO APRIL, 1965.

INCIDENCE BY DATE OF ONSET



During the initial investigations the department followed many possible clues as to the possible source of the outbreak. One such clue was highly probable but was in fact a blind lead.

On the 9th of April one food handler was found whose home conditions were bad. He lived in a flat and the sanitary conditions were poor. He had a huge locally made refrigerator in the sitting room where he made his own ice which he used for the cold drinks and for making ice-balls (called “Ayer Batu Malaysia” consisting of “kachang” and sugar water in plastic bags). Bacteriological samples taken of the ice blocks and the “Ayer Batu Malaysia” packets showed gross faecal contamination but *Salmonella* organisms were not demonstrated.

One patient, a University Student who worked during the vacation as a part-time teacher at the school, gave a good history. He stated positively that among the drinks he had taken was “coconut water”. A cross check on other case histories established that some other patients had made this statement also. The list of drinks sold by hawkers at the school or outside it did not show any “coconut water” being sold there. It was subsequently established that this hawker had not appeared in the list of food-handlers because he had become ill with typhoid and had stopped selling at the school before the first cases were notified to the health authorities. The hawker sold other cold drinks besides “coconut water”. Protracted enquiries led the health team to this hawker who lived in the Paya Lebar area. When he was found he was acutely ill with typhoid and was immediately removed to hospital.

His home conditions were text-book pattern. It was an insanitary house without proper sanitary facilities in the midst of a farming area with piggeries and chicken coops. There was evidence of fly breeding.

Public Reaction.—Whenever there is an outbreak of this nature there is anxiety. In Middleton Hospital, not only are confirmed cases admitted but a large number of suspected cases come. This number during the outbreak was twice the number of confirmed cases and made demands for additional hospital beds.

Inoculation.—Inoculation against typhoid in the incubatory phase is a debatable step. Inoculation was started on the 7th of April and repeated a week later. Out of 3,400 students, some 2,700 students were inoculated.

Bacteriologic Features.—Positive co-relationship between the suspected carrier and the cases was not established as a positive isolate was not possible from the suspected carrier who had received chemotherapy prior to being picked up by the health authorities. However phage-typing of *Salmonella typhi* from the first 30 students of the school established that they were all Vi-phage type A.

PART III
HOSPITALS DIVISION
AND
RELATED SERVICES

Chapter Fifteen

HOSPITALS DIVISION AND RELATED SERVICES

THE Hospitals Division is responsible for the “curative” medical services and is provided mainly by the Hospitals and Outpatient Services.

HOSPITAL SERVICES IN THE MID-SIXTIES

The mid-sixties form a convenient point to review the Hospitals Services. 1960 was a year of transition: it was the first complete year after self-government and the Ministry of Health assumed responsibility for the entire Medical and Health Services in Singapore. It coincidentally also marked the end of the 10-year Medical Plan when the last building in the Plan was completed.

So ended an era. This is a record of the beginnings of the new. The period may be described as a period of consolidation, where the main effort was directed towards maintaining the services while undertaking essential re-organisation and the build-up in the numbers of its personnel.

Organisation

Important changes in organisation were effected during this period. One was the unification of the public medical and health services. The health services which had been under the local authority, i.e. the City Council, were integrated with the services under the Minister for Health. In this transfer of functions in late 1959, the City Council's Middleton Hospital for infectious diseases, its eight Public Dispensaries and its three Staff Dispensaries came under the jurisdiction of the Hospital Division.

On the same lines, the Tan Tock Seng Hospital which had been instituted as a Corporation under a Board of Management was transferred, on 1st April, 1961, under the administration of the Hospital Division, and on 8th August, 1963, the Opium Treatment Centre at St. John's Island was transferred from the administration of the Prisons Department to the Outpatients administration when the Dangerous Drugs (Temporary Provisions) Ordinance lapsed.

Integrated also into the service was the Singapore Hospital Reserve, the corps of volunteer nursing aides which had previously been under the Director of Civil Defence.

To effect central control of the hospitals the Hospitals Board was dissolved by the Hospitals Board (Repeal) Ordinance on 19th February, 1960, and this cleared the way for the establishment of the Hospitals Division within the Ministry of Health on 1st January, 1962.

The aim of the Hospitals Division was to provide an efficient administration of the hospitals and outpatient services; to centralise some of the administrative functions of the institutions so that the burden of work in the peripheral hospitals might be lessened. On policy matters, its function was to initiate and advise on development, staffing and training.

The re-organisation was a qualified success. The exercise of financial control and planning, for instance, required systems for costing and collection of reliable data on hospital statistics. Until these systems were devised these functions could not be performed in the efficient and rational way expected. The other shortfall in expectation was in reduction of work in the administration of the peripheral institutions. The institutions were not really able to shed-off any major administrative functions to the divisional office. The re-organisation, however, did achieve some of its purposes. Its great advantage was the unification of services under a central administration in a service which provided almost 90 per cent of the hospital beds in Singapore; dual control and duplication of authority having been eliminated.

Development

The 10-year Medical Plan was designed to extend and modernise the medical and health services to make-up for the neglect of the war-years and to catch-up with the enormous demands which had grown over the years.

Much was achieved in the Plan but it was soon apparent that the total hospital facilities fell short of needs.

The list of the principal hospital buildings completed under the Plan is set out in Table 61.

TABLE 61

HOSPITAL EXPANSION IN THE 10-YEAR MEDICAL PLAN

				<i>Date Completed</i>	<i>Additional Beds</i>	
Outram Road General Hospital:						
Surgical Block	..	..	..	1955	72	
E.N.T. Unit	..	..	..	1956	60	
Burns Unit	..	..	..	1959	40	
Paediatric Unit	..	..	..	1955	300	
Total				..	472	
Thomson Road General Hospital				..	396	
						868
Kandang Kerbau Maternity Hospital						
Maternity Block	..	..	..	1955	116	
Renovations Gynae, Block (additional floor)	..		..	1955	130	
Total				..	246	

TABLE 61—*continued*

Tan Tock Seng Hospital (for Tuberculosis):

4 Hospital Blocks	1957 and 1958	816
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Trafalgar Home (for Leprosy):

69 Chalets and Dormitories	1951—1952	276
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2 Ward Blocks	1955	104
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1 Ward Block	1957	30
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Total	410
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Middleton Hospital (for infectious diseases):

Ward	1956	30
------	----	----	----	----	------	----

St. Andrew's Orthopaedic Hospital:

Ward	1954	40
------	----	----	----	----	------	----

Woodbridge Hospital:

4 Ward Blocks	1957	240
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Mental Defective Unit	1959	45
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Total	285
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Grand Total	1,827
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It will be noticed that development was chiefly for infectious diseases hospitals: at Trafalgar Home (for Leprosy); Tan Tock Seng Hospital (for Pulmonary Tuberculosis); Middleton Hospital (for Infectious Diseases).

The provision of general beds was relatively less. The deficiency in general beds was made more apparent when Tan Tock Seng Hospital which had 600 beds before the Pacific War was converted from a general hospital to a special hospital for the treatment of tuberculosis after the War.

These qualitative deficiencies should be noted when examining Table 62 on Hospital Beds. Although there has been an overall increase in hospital beds this has not been in proportion to the population increase as Table 63 shows.

TABLE 62
HOSPITAL BEDS IN GOVERNMENT HOSPITALS

	Pre-war	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
General Hospital ..	750	550	550	600	700	750	750	800	800	800	957	1,205	1,182	1,191	1,231	1,231	1,231	1,231	1,231	1,132	1,278
Thomson Road Hospital..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	396	396	396	396	396	396	396
Kandang Kerbau Hospital (Maternity and Gynæcology) ..	180	200	220	240	240	240	240	240	240	240	316	316	316	316	316	390	438	443	443	443	443
Tan Tock Seng Hospital (Tuberculosis) ..	600	400	400	550	572	600	540	565	564	564	564	972	938	1,142	1,144	1,200	1,234	1,250	1,320	1,320	1,320
Middle Road Hospital (Venereal Diseases) ..	..	60	60	60	68	70	70	70	60	60	65	65	65	65	55	58	61	60	61	61	61
Middleton Hospital (Infectious Diseases) ..	250	250	250	250	250	250	250	250	200	200	200	250	250	250	250	250	250	250	250	250	250
Trafalgar Home (Leprosy)	200	260	347	382	451	536	640	725	642	642	954	973	973	1,023	1,023	1,023	1,023	1,023	1,023	965	965
Woodbridge Hospital (Mental illnesses) ..	2,000	440	700	1,000	1,200	1,600	1,800	1,800	1,800	1,800	1,800	1,800	2,040	2,222	1,869	1,869	1,869	1,869	1,869	1,869	1,869
Mental Defective Hospital	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46	46	44	45	45
Chronic Sick Hospital ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	35	35	70	70	70
St. Andrew's Orthopædic Hospital ..	..	60	60	60	65	70	70	78	120	120	120	120	120	120	120	120	120	120	120	120	120
	3,980	2,220	2,587	3,142	3,546	4,116	4,360	4,528	4,635	4,426	4,976	5,701	5,884	6,329	6,404	5,637	6,703	6,723	6,827	6,671	6,817

TABLE 63

NUMBER OF BEDS AVAILABLE, PRINCIPAL TYPES

(The figures exclude beds in Institutional and Prison Hospitals and Charitable Homes)

		1960	1961	1962	1963	1964	1965
Total Hospital Beds ..	..	7,232	7,539	7,567	7,573	7,451	7,686
per 1,000 population	..	4.4	4.5	4.4	4.3	4.1	4.1
Government Hospital Beds ..	..	6,582	6,807	6,831	6,827	6,671	6,817
per 1,000 population	..	4	4	3.9	3.8	3.6	3.6
Private Hospital Beds ..	..	605	732	736	746	780	859
per 1,000 population	..	.4	.4	.42	.42	.43	.46
General Beds (Government) ..	..	1,627	1,647	1,629	1,627	1,528	1,674
per 1,000 population	..	1	1	.94	.92	.84	.9
Maternity Beds ..	..	390	438	467	443	443	443
per 1,000 population	..	.24	.24	.27	.25	.24	.24
Psychiatric Beds ..	..	1,869	1,869	1,869	1,869	1,869	1,869
per 1,000 population	..	1.1	1.1	1.08	1.05	1	1
Tuberculosis Beds ..	..	1,200	1,234	1,250	1,320	1,320	1,320
per 1,000 population	..	.73	.73	.73	.75	.72	.71

Population Mid-Year 1965 = 1,864,900

No criticism is implied in these statements. The development must be related to the conditions prevailing at that time. After the Japanese Occupation Tuberculosis was rife, being responsible for the most number of deaths in Singapore; the Leprosy Home was grossly overcrowded and the Infectious Diseases Hospital was in a poor state of repair.

The service which was taken over in 1960 was relatively well-developed but was still inadequate to meet the needs of the population which had grown from three-quarters of a million people just before the Pacific War to more than twice (1.634 million) in 1960. It was also a population which was turning more and more towards western medicine and therefore demanding these services in larger measure.

Compounded with the relative lack of physical capacity was the shortage of doctors of all grades. The shortage in the higher echelons was particularly grave as the service had lost almost all its senior expatriate officers who had retired or left under the Malayanisation Scheme.

There was a deficiency in other grades of ancillary staff: of Nurses, Technicians, Radiographers as well. The shortages, more than anything else, held back development and expansion of the services.

The buildings which were completed in the period are given in Table 64. But this development achieved about a quarter only of the schemes which were included in the State's First Development Plan. The main reason the full plans were not achieved was because of the lack of personnel.

TABLE 64

LIST OF COMPLETED DEVELOPMENT PROJECTS, 1959—1965

				Completed	Cost		
					\$	c.	
<i>Outpatient Dispensary</i>							
Lim Ah Pin ..	..	..	11-7-60		43,103	00	
Jalan Kayu ..	..	..	22-8-60		123,532	00	
Kampong Tiong Bahru ..	..	..	14-8-61		19,550	00	(Equipment only. Building by H & D. Board).
Kampong Bugis ..	..	..	20-8-61		38,512	00	
Extensions—Kallang ..	..	..	14-3-62		50,832	00	
Somapah ..	..	..	24-7-62		68,738	00	
Queenstown ..	..	..	12-11-62		394,000	00	
Sembawang ..	..	..	6-3-63		160,000	00	
Still Road ..	..	..	20-2-63		355,000	00	
Prinsep Street ..	..	..	14-7-63		20,982	00	(Equipment only. Building by H. & D. Board).
Maxwell Road ..	..	..	3-7-64		87,629	00	} Works and Buildings. Furniture and Equipment.
					24,000	00	
<i>General Hospital</i>							
X-Ray Department —Renovations ..	..	31-12-62			320,000	00	
Mortuary —Renovations ..	..	14-6-63			77,730	00	
Dispensary —Renovations ..	..	30-11-62			29,255	00	
Boiler House ..	..	23-7-62			93,396	81	
School of Radiography—							
Eye Operation Theatre—Extensions	Dec. 1964				10,817	00	
Third Medical Unit ..	..	24-2-65			141,405	00	} Works and Buildings. Furniture and Equipment.
					79,768	13	
<i>Thomson Road General Hospital</i>							
Theatre, X-ray, O.P Block ..	..	20-2-65			869,363	00	} Works and Buildings. Furniture and Equipment.
					859,891	00	
Assistant Nurses Training School ..	..	12-7-65			249,029	00	} Works and Buildings. Furniture and Equipment.
					7,520	00	
<i>Kandang Kerbau Hospital</i>							
Alterations—Store ..	..	28-3-62		}	26,003	00	
Alterations—Dispensary ..	..	31-3-62					
Lifts for O.P. ..	..	Dec. 1962			39,733	00	
Refuse Incinerator ..	..	Dec. 1962			7,201	00	
<i>Tan Tock Seng Hospital</i>							
Occupational Therapy Department ..	..	6-4-62			24,418	00	
Theatre Block ..	..	25-10-65			71,606	07	} Furniture and Equip- ment. Works and Buildings.
					584,655	00	
<i>Trafalgar Home</i>							
Operating Theatre ..	..	Dec. 1964			2,405	00	} Minor Works. Equipment
					13,094	00	
<i>Woodbridge Hospital</i>							
Improvement to Water Supply ..	..	7-12-61			34,682	00	
Recreation Hall ..	..	Nov. 1961			10,114	00	
<i>Quarters</i>							
Division IV Quarters—T.T.S.H. ..	..	1-4-63	}		1,047,460	00	
W.H. ..	..	31-12-62					

In this period development was concentrated on Outpatient Dispensaries. This development brought the total number of Outpatient Dispensaries to 32. Within a decade this service had grown from an Admission Room service to an organisation of its own commanding an establishment of about 75 doctors and attracting attendances of over 2,000,000 patients a year.

The rapid development of this service was halted after 1964 as it was running ahead of the resources in personnel. It was also creating problems in the hospitals as larger numbers of patients were being referred to the hospitals and these could not be coped with adequately since the hospitals had not expanded nor had they been able to get very much additional staff.

Although this one-sided development has been a subject of critical comment a broader view is that it was able to absorb some of the growing demands for hospital services. The development of Outpatient Dispensaries must, in this sense, be considered as a stop-gap measure.

Development, 1965

Important hospital developments were completed in 1965. These were: (1) The Third Medical Unit in the Outram Road General Hospital. This unit was formed from wards which had previously been used as stores, linen rooms, official clinics.

The Unit adds a total of 146 beds to the bed complement in the hospital. The total number of beds for adult general medical patients now number as follows:

			'A'	'B'	'C'
Medical Unit I	..	..	17	13	86
Medical Unit II	..	..	24	25	82
Medical Unit III		..	8	18	120
Thomson Road Hospital, Medical Unit	..		—	—	180
Tan Tock Seng Hospital, Medical Unit	..		—	—	102

The cost for the conversion was \$141,405 and for equipment was \$79,768.

(ii) The Thoracic Surgical Unit at Tan Tock Seng Hospital. The buildings were completed on 26th October, 1965, but some of the equipment had not yet been installed for surgical work to begin.

The building consists of two large surgical suites, ancillary rooms and includes monitoring rooms, a recovery room, and an X-ray department.

With this development the Tan Tock Seng Hospital has all the main components of a complete hospital. Although it had been a hospital for the treatment of pulmonary tuberculosis all surgical work on its patients had to be done in the surgical units at the General Hospital.

(iii) The new extensions consisting of a block for the surgical theatres, X-ray Department, Outpatient and Casualty Units at the Thomson Road General Hospital were opened on 20th February, 1965, by the Minister for Health.

With these facilities the conversion of the hospital originally built for the Chronic Sick, to a General Hospital was completed. The new block cost \$869,363 to build.

(iv) The opening of the School for Assistant Nurses at Thomson Road General Hospital on 12th July, 1965.

The school was built to accommodate 400 pupils. It cost \$249,029.

The development gave the Assistant Nurses their own school and was evidence of the growing importance of this grade of nursing staff in the services. Established in 1951 for nursing tuberculous patients in Tan Tock Seng Hospital the Assistant Nurses were now spread into almost every sphere of the hospital services. The original make-shift buildings used as a school at Tan Tock Seng Hospital were soon inadequate. The transfer of the school to the Thomson Road General Hospital was evidence also of their changing role, where their training was now in general hospital practice instead of a bias towards the nursing of tuberculous patients.

(v) The laying of the foundation stone for an Institute of Medical Specialities on 27th November, 1965, by Dato Lee Kong Chian.

The project was a departure from the usual lines of development of the hospital services undertaken up-to-date. It was conceived as a joint Government and University project, founded on the proposition that as medical sciences advance specialisation becomes essential. In the past 60 years and notably since the Pacific War qualified staff and specialists had been built up in the service but were unable to give a full measure of their training and experience because of the lack of adequate equipment and facilities. The Institute will provide these facilities for advanced medical services: for patient care, surgical operation theatres and laboratories which cannot now be given for lack of adequate space in the existing hospitals. One of the main units built will be the Radiotherapy Unit equipped with Cobalt Units and a Radio-isotope Laboratory. Other specialities which will be housed in it includes units for Human Genetics and Cytology, Hæmatology, Cardiology and Cardiac Surgery, Neurology, and Neurosurgery, Renal, Dermatology and Gastroenterology. There will be surgical operating theatres and laboratories as well as seminar rooms and lecture halls.

1965 was the Diamond Jubilee of the Medical School. As part of its celebrations, the University undertook a public appeal for contributions for the Institute and for the Library of the Faculty of Medicine for "Medical Progress". Government had guaranteed half the cost of development (up to \$2.375 million). Public response was very generous; the target sum of the other half was over-subscribed by the year's end.

Staff

Throughout the period the service suffered from a shortage of staff. In 1960 the Medical Officers numbered 64 per cent of the establishment and

in Nurses it was about 85 per cent. Tables 65 to 68 show the staff position during the period.

The reasons for the shortages were several. There was the loss of expatriate staff following the policy of Malayanisation when internal self-government was achieved; a larger than usual exodus of medical officers and nurses, for various reasons, such as general dissatisfaction with service conditions, the cuts in variable allowances in 1959 (restored subsequently on 1st September, 1961).

In 1963 the Franciscan Nursing Nuns terminated their services in the Tan Tock Seng Hospital and Trafalgar Home to man their own hospital known as the Mount Alvernia Hospital.

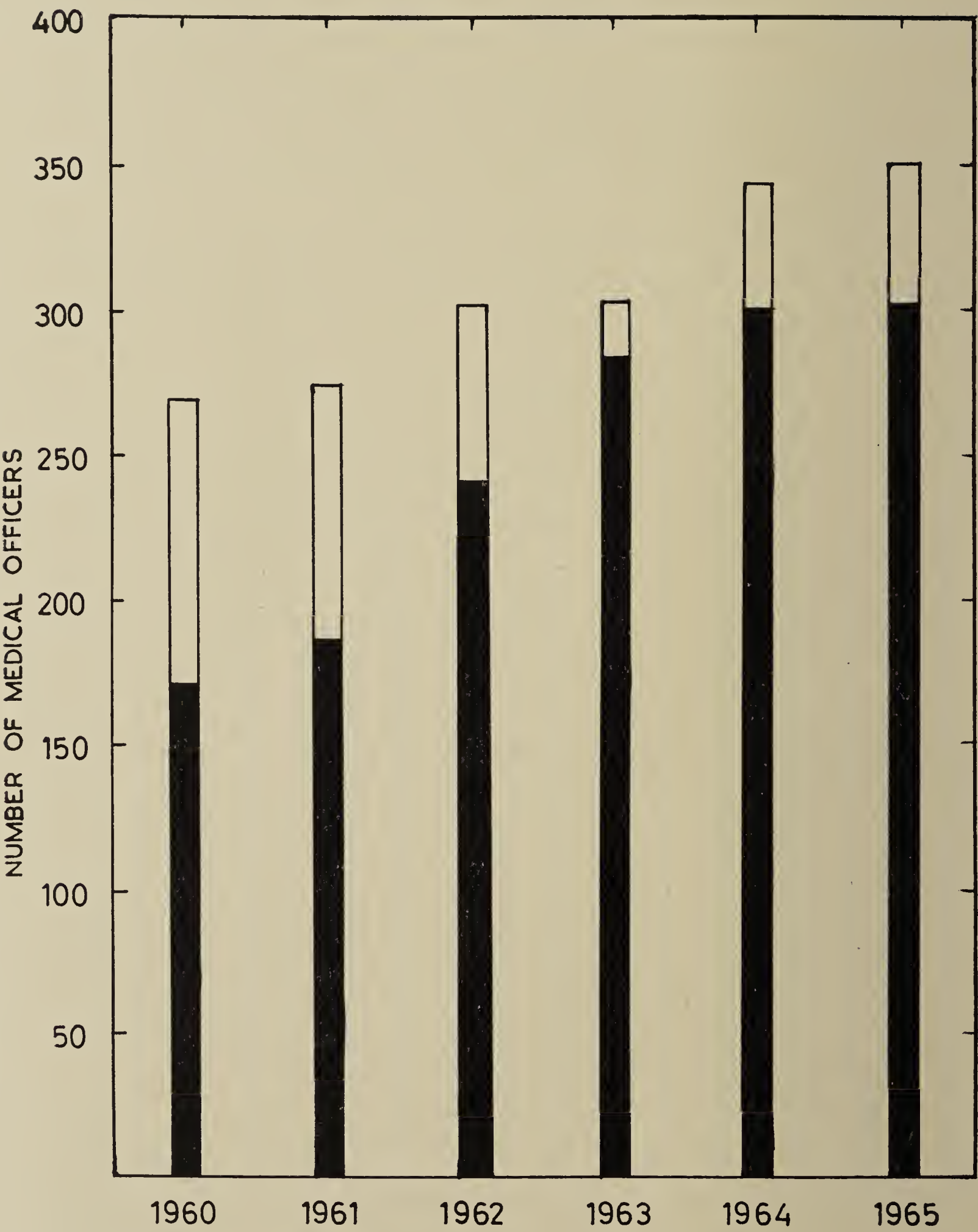
TABLE 65

ESTABLISHMENT OF MEDICAL OFFICERS, HOSPITAL DIVISION 1960—1965

			1960	1961	1962	1963	1964	1965
Superscales:								
Establishment	..	..	38	39	42	42	52	52
Actual Numbers	..	..	28	31	52	32	36	41
Senior Registrars:								
Establishment	..	..	30	30	32	35	39	41
Actual Numbers	..	..	8	15	21	41	39	40
Medical Officers:								
Establishment	..	..	201	206	241	239	252	257
Actual Numbers	..	..	135	140	169	206	226	232
Total Establishment	..	..	269	275	315	316	343	350
Actual Numbers	..	..	171	186	242	279	301	319
% of establishment filled		..	64%	66%	77%	88%	88%	90%

Actual Numbers = as at end of year.

TABLE 66
ESTABLISHMENT MEDICAL OFFICERS HOSPITAL DIVISION



LEGEND :



AUTHORISED ESTABLISHMENT

MEDICAL OFFICERS on ESTABLISHMENT
at end of year.

TABLE 67

ESTABLISHMENT OF NURSES, HOSPITALS DIVISION 1960—1965

			1960	1961	1962	1963	1964	1965
Matrons:								
Establishment	..	..	14	15	16	17	17	17
Actual Numbers	..	..	8	13	14	16	15	16
Sisters:								
Establishment	..	..	180	193	201	204	224	224
Actual Numbers	..	..	107	123	120	197	210	203
Staff Nurses:								
Establishment	..	..	1,026	1,075	1,206	1,499	1,627	1,711
Actual Numbers	..	..	906	937	1,054	1,291	1,402	1,554
Assistant Nurses:								
Establishment	..	..	461	547	727	935	938	952
Actual Numbers	..	..	428	522	643	828	882	937
Total Establishment (All grades)	..		1,681	1,830	2,150	2,655	2,806	2,904
Actual Numbers	..	..	1,449	1,595	1,831	2,332	2,509	2,710
% of establishment filled		..	86%	87%	85%	87%	89%	93%

TABLE 68

OTHER STAFF, 1960—1965

			1960	1961	1962	1963	1964	1965
Midwives:								
Establishment	..	..	161	161	186	161	161	161
Actual Numbers	..	..	97	114	123	155	153	161
Radiographers:								
Establishment	..	..	26	30	30	32	43	48
Actual Numbers	..	..	20	22	27	28	26	29
Physiotherapists:								
Establishment	..	..	19	20	20	20	20	21
Actual Numbers	..	..	13	16	15	15	19	21
Occup. Therapists:								
Establishment	..	..	10	13	13	13	13	13
Actual Numbers	..	..	6	10	10	10	12	13
Almoners:								
Establishment	..	..	27	29	32	32	32	32
Actual Numbers	..	..	26	24	21	22	19	22
Dietitians:								
Establishment	..	..	4	4	7	7	7	7
Actual Numbers	..	..	4	4	4	6	7	6

In 1960, a small group of doctors were recruited from Israel (four) and from Japan (five) to man some of the departments which were short of specialist staff. The pathologist and bacteriologist from Israel were particularly helpful. Under Colombo Plan Technical Assistance Scheme relays of Ear, Nose and Throat specialists from Australia worked in the department from 1964 to December 1965 when the department was without a specialist and while a local officer was away in Australia under training.

Useful as such assistance was, they were stop-gap measures. The shortages would remain unless local officers were produced in larger numbers and were retained in the service over and above the number lost.

Services

The changes in the pattern of the hospital services during the period were as follows: As described previously the main developments were in the Outpatient Service. A change in the trend was seen in the conversion of the Thomson Road Hospital which had been planned as a Chronic Sick Hospital but was converted to a general hospital. This conversion was completed when the surgical operating theatres, X-ray Department and Outpatient Clinics were opened in February, 1965. This hospital now takes its place as the second General Hospital in Singapore.

A Chronic Sick Hospital — more a hospital unit — was opened on 16th January, 1963 instead in a standard hospital block within the compound of the Woodbridge Hospital. While accommodation was limited to 70 beds, it formed the nucleus of the future Chronic Sick Hospital.

The Mentally Defective Home for children which had accommodation for 45 children was opened in October 1959. Again, this was a token facility and not at all adequate in accommodation for the numbers required.

A significant, but little noted, event was the establishment of a medical unit at the Tan Tock Seng Hospital on 23rd January, 1963 — when three wards (providing accommodation for 102 beds) were opened for adult medical cases. The immediate reason for using these wards in the Tuberculosis Hospital was the need to off-load some of the medical cases from the Outram Road General Hospital. The re-establishment of a medical unit in the Tan Tock Seng Hospital had significance, however, as it was the first step to the re-conversion of the hospital to a multi-purpose general hospital.

A major re-organisation of the Outpatient Services was undertaken in August 1964, when the Outpatient Services separated out entirely on its own, and its Outpatient Dispensary at the General Hospital was relinquished and converted as an Emergency and Admission Room for that hospital.

Concurrently, patients attending at the Outpatient Dispensaries were charged a nominal fee of 50 cents for each attendance, and on 1st December, 1964 in the Kandang Kerbau Hospital charges were also introduced for deliveries in the free wards at a charge of \$10 for each case.

1965 was the first full year of the re-organised Outpatient Services, the Emergency and Admission Room Unit at the General Hospital and also the

first full year where the impact of the introduction of charges for outpatient attendances and for deliveries in the former free class wards, Kandang Kerbau Hospital.

The re-organisation was now considered as having fulfilled their purposes and the introduction of charges have been accepted by the attending public. A review of these changes will be given in the individual reports of the institutions that follow (Part II).

The introduction of charges although limited in application and small in amount marked a major change in the pattern of the hospital services which have hitherto been largely a free one.

ACTIVITIES, 1965

A Blood Transfusion Campaign which sought to stir interest and support for blood donations was conducted in the new year. A week's exhibition beginning on the 22nd January, 1965, was held. The exhibition was opened by the Minister for Health. It was associated with publicity in the mass media by radio talks, television interviews and cinema shorts.

An Anti-Leprosy Campaign which started at the end of 1964 went into full swing when an Anti-Leprosy Exhibition which was opened on 26th February, 1965, in the Victoria Memorial Hall by the Head of State. This Exhibition lasted for a week and marked the beginning of the year-long campaign when the Exhibition moved to various Community Centres throughout the island. These series of exhibitions included talks, film shows and where even skin clinic sessions were also held.

A WHO Regional Seminar on Public Health Programme in Radiological Health was held from 7th December to 11th December, 1965.

Open Heart Surgery was performed for the first time and as the team became more proficient the operations were carried at fairly regular intervals. A total of 14 operations were performed by the end of the year with one death. It is unfortunate that the Surgeon of the team accepted an appointment to the Chair of Surgery in the University of Malaya and left the service at the end of the year.

A generous offer was made by the Government of Western Australia to accept selected patients for Open Heart Surgery for operation in Perth. To take advantage of this offer, the passage for the patients to and from Australia had to be found. For this purpose, a Committee was formed in the Ministry to administer the scheme. Suitable patients were selected by a Cardiac Committee in the General Hospital after they have been suitably investigated in the Cardiac Laboratory. A social case report was submitted by the Almoners. If the patient was acceptable to the Surgeons in the hospital in Perth arrangements were then made for passage of the patients. The aim was to send 10-12 patients in the scheme and five patients had been sent by the end of the year. Their passage had been paid by the Rotary Club and one had been paid by the Lions Club.

Of the five patients sent, one unfortunately died after operation.

Cytology

A Medical Officer who had been sent to the Harvard Medical School for training in Cytological techniques returned in November. A cytology laboratory had, in the meantime, been completed although without all the equipment necessary. The screening service will initially be limited to women who attend at the clinics in the Maternity Hospital. As more laboratory staff are trained, the service will be extended.

HOSPITAL SERVICES

A record of hospital activity is given in the form of figures in the Tables 69 and 70. Table 70 is a statistical summary of the work of the principal hospitals for the year.

Two indices on bed-utilisation are given as yearly Tables in Table 71 and Table 72.

TABLE 69

MEDICAL INSTITUTIONS, 1965

	Beds
<i>Government Hospitals</i>	
General Hospital	1,278
District Hospital (Thomson Road General Hospital) ..	396
Maternity Hospital (Kandang Kerbau Hospital) ..	443
Tuberculosis Hospital (Tan Tock Seng Hospital) ..	1,320
Venereal Diseases Hospital (Middle Road Hospital) ..	61
Infectious Diseases Hospital (Middleton Hospital) ..	250
Leprosy Hospital (Trafalgar Home)	965
Mental Hospital (Woodbridge Hospital)	1,869
Mental Defective Hospital	45
Chronic Sick Hospital	70
St. Andrew's Orthopaedic Hospital	120
	<hr/> 6,817 <hr/>
<i>Private Hospitals</i>	
Gleneagles Hospital (General Hospital)	80
Kwong Wei Siu Hospital (Cantonese Community Hospital)*	454
Mt. Alvernia Hospital (General Hospital)	128
St. Andrew's Mission Hospital (Children's Hospital) ..	80
Singapore Nursing Home	14
Youngberg Hospital (General Hospital)	67
	<hr/> 823 <hr/>
<i>Institutional Hospitals</i>	
Prison Hospital—Changi Prison	64
Opium Treatment Centre (St. John's Island)	22
Police Advanced Training School Hospital	20

*Hospital provides treatment in both "Western" and Chinese systems of medicine.

TABLE 70
STATISTICS SHOWING ACTIVITIES OF PRINCIPAL HOSPITALS 1965
HOSPITAL UTILIZATION FACTORS

Hospital	Bed Comple- ment	Average Daily Number of Available Beds	Average Daily Bed Occupancy	Average Percent- age Occupancy	Dis- charges and Deaths	Average Length of Stay (1)	Turn- over per Bed (2)	Deaths	Per- centage of Deaths to total Discharges and Deaths	Total Patient Days
Outram Road General Hospital ..	1,278	1,212	1,088.00	89.77	42,486	9.00	35.00	2,355	5.54	390,422
Thomson Road Hospital (General Hospital)	396	288	168.00	58.33	7,427	8.26	26.00	409	5.51	61,320
Kandang Kerbau Hospital (Maternity Hospital)	443	443	510.00	115.10	51,738	3.60	117.00	76	.15	186,103
Tan Tock Seng Hospital (Tuberculosis Hospital)	1,320	1,320	1,146.00	86.81	6,560	63.76	4.97	567	8.64	418,291
Middle Road Hospital (Social Hygiene Hospital)	61	61	34.08	55.74	1,161	10.71	19.03	..	..	12,439
Middleton Hospital (Infectious Diseases Hospital)	250	250	155.75	62.30	3,950	14.40	15.80	31	.78	56,840
Trafalgar Home (Leprosy Hospital) ..	965	965	573.00	59.40	339	617.00	.35	8	2.36	209,145
Woodbridge Hospital (Mental Hospital) ..	1,869	1,869	3,779.00	202.00	2,847	484.00	1.52	91	3.20	1,379,478
Mental Defective Hospital	45	45	42.00	93.33	5	3,094.00	.10	1	20.00	15,470
Chronic Sick Hospital	70	70	64.00	91.00	52	450.79	.74	42	80.77	23,441
St. Andrew's Orthopaedic Hospital ..	120	120	88.52	74.00	165	196.00	1.38	..	..	32,311

TABLE 70—continued
STATISTICS SHOWING ACTIVITIES OF PRINCIPAL HOSPITALS 1965
HOSPITAL UTILIZATION FACTORS

Hospital	Bed Comple- ment	Average Daily Number of Available Beds	Average Daily Bed Occupancy	Average Percent- age Occupancy	Dis- charges and Deaths	Average Length of Stay (1)	Turn- over per Bed (2)	Deaths	Per- centage of Deaths to total Discharges and Deaths	Total Patient Days
<i>Institutional Hospitals:</i>										
Prisons: Changi ..	64	64	50.00	78.00	146	124.00	2.00	..	..	18,084
Local ..	48	48	35.00	73.00	600	21.00	13.00	12	2.00	12,694
Opium Treatment Centre, St. John's Island	22	22	14.00	64.00	369	14.00	16.00	..	..	5,005
Police Advanced Training School Hospital	20	20	2.00	10.00	100	7.20	5.00	..	..	720

(1) Average Length of Stay

=

Total Patient Days

Discharges and Deaths.

(2) Turnover Per Bed

=

Discharges and Deaths

Average daily number of available beds.

TABLE 71

BED TURNOVER IN HOSPITALS*

Hospital	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
General Hospital	29.215	26.825	29.207	29.937	33.244	33.960	33.652	37.063	38.845	38.728	35
Thomson Road Hospital .. ..	..	..	..	..	..	..	..	..	19.839	22.872	26
Kandang Kerbau Hospital (Maternity and Gynæcology)	94.446	102.759	114.427	125.826	141.569	123.774	112.308	107.396	113.034	113.786	117
Tan Tock Seng Hospital (Tuberculosis) ..	4.521	2.639	3.317	3.444	3.858	3.652	3.714	4.076	3.987	4.570	4.97
Middle Road Hospital (Venereal Diseases)	21.646	21.000	20.923	17.723	21.308	19.896	19.820	22.067	15.459	17.295	19.03
Middleton Hospital (Infectious Diseases) ..	17.130	15.708	15.088	15.120	14.564	20.488	16.464	20.348	19.764	13.860	15.80
Trafalgar Home (Leprosy)	1.108	1.153	1.206	1.162	1.217	1.126	0.965	0.971	0.336	1.566	.35
Woodbridge Hospital	1.861	2.051	1.970	1.719	1.972	2.240	2.455	2.713	1.273	1.211	1.52
Mental Defective Hospital .. ..	..	..	..	..	..	..	..	..	0.023	.044	.1
Chronic Sick Hospital .. ..	..	..	..	..	..	..	..	..	0.643	.929	.74
St. Andrew's Orthopædic Hospital ..	2.108	2.783	2.917	2.092	2.017	2.141	3.375	2.958	1.200	1.566	1.38

*Figures up to 1962 are for “Crude Bed Turn-over” which is based on:
Total Cases Treated (Patients remaining at the beginning of the year, plus number of patients admitted during the year).
Divided by the average daily number of available beds.

After 1962, figures are calculated:
Discharges and Deaths.
Average daily number of available beds.

TABLE 72
AVERAGE PATIENT BED DAYS*

Hospital	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
General Hospital ..	12.493	13.641	12.749	12.192	10.979	10.777	10.847	9.848	9.203	8.74	9.00
Thomson Road Hospital ..	..	..	..	..	..	..	..	..	17.757	12.80	8.26
Kandang Kerbau Hospital ..	3.529	3.561	3.189	2.901	2.579	2.953	3.250	3.398	3.174	3.22	3.60
Tan Tock Seng Hospital ..	80.729	138.695	110.051	105.396	94.814	100.228	98.257	89.549	75.444	68.78	63.76
Middle Road Hospital ..	16.862	17.429	17.445	20.595	17.129	18.394	18.416	16.541	22.332	9.43	10.71
Middleton Hospital ..	21.308	23.549	24.483	24.114	25.062	17.864	22.170	17.938	11.143	13.40	14.40
Trafalgar Home ..	329.375	317.405	302.767	314.041	299.916	325.016	377.930	376.027	399.353	722.75	617.00
Woodbridge Hospital ..	196.119	178.440	189.997	212.255	186.702	163.376	148.624	134.527	121.666	560.65	484.00
Mental Defective Hospital ..	..	..	..	..	..	..	..	..	373.721	8235.00	3094.00
Chronic Sick Hospital ..	..	..	..	..	..	..	..	..	222.174	384.25	450.00
St. Andrew's Orthopaedic Hospital ..	137.123	131.497	125.143	174.502	180.992	170.891	108.148	123.380	123.034	186.80	196.00

*Figures for years up to 1963, calculated thus:

Beds allocated × No. of days in the year

$\frac{\text{Total No. of Patients treated}}{\text{(i.e. No. of admissions + No. of patients remaining in hospital at beginning of year)}}$

From 1964 onwards, calculated thus:

$\frac{\text{Total Patient Bed Days}}{\text{Discharges and Deaths.}}$

The work in the hospitals appears to have levelled-off. The exception was in the Woodbridge (Psychiatric) Hospital. The Hospital was generally filled by twice over its normal complement of bed. The overcrowding in the hospital was subject to an inquiry by a committee instituted by the Minister for Health. The reasons were quite evident: one was the inheritance of the past when treatment was less active and there was now a large number of patients who have become so institutionalised that they cannot be discharged; accommodation for psychiatric patients had not been increased over the years. The immediate solution will be in opening as many wards wherever possible in the existing hospitals to accommodate some of these patients; to increase the turn-over of patients in the hospital and to treat more patients in Out-patient Clinics and in day centres.

Another point, not brought out by the figures, is the evidence of the continuing problem of venereal diseases as seen in the Social Hygiene Service.

The number of patients treated for venereal infections in the Social Hygiene Service remains constant. (Table 73). The figures do not reflect the true incidence of these diseases as the infections are not notifiable; probably a good number are treated privately or avoid treatment entirely.

TABLE 73

<i>Year</i>		<i>Syphilitic Infections</i>	<i>Gonorrhoea</i>	<i>Total all V.D.</i>
1960	..	860	2,529	4,295
1961	..	626	1,970	3,335
1962	..	719	2,402	4,168
1963	..	574	1,793	2,921
1964	..	662	2,378	3,910
1965	..	604	2,047	3,282

The number attending at the Social Hygiene clinics may be taken as a reflection of the actual numbers of the diseases occurring in the community. Since there has been no evidence of a fall in these numbers the diseases must be considered as unchecked.

The danger is that in common with other countries, the diseases are increasing again and in more dangerous forms. They are appearing as resistant cases to treatment; and appearing in the younger age groups.

The subtle changes in the patterns of the disease are perhaps already evident. The incidence of early syphilis which may be taken as an index of infectivity continues to be high:

			1960	1961	1962	1963	1964	1965
Primary Syphilis	..	..	198	166	114	79	92	70
Secondary Syphilis	..	..	24	21	13	46	27	27
Early Latent Syphilis	..	..	116	123	212	138	180	185

The view is supported by the social investigators, anti-vice squads who have the impression that promiscuity and the diseases are on the increase.

It will be necessary to improve and extend the service in the coming years.

OUTPATIENT SERVICES

There are two categories of outpatients, which are treated in two different organisations and the report of their attendances is given separately:

- (i) Outpatients attending at the Outpatient Clinics of hospitals or hospital units. These Outpatient Clinics are considered speciality

clinics where patients are referred for consultations or are seen as follow-up for special investigations or treatment;

- (ii) Outpatients who attend at the Outpatient Dispensaries. The Outpatient Dispensary services form a separate organisation and consist of all the Government Outpatient Dispensaries, their Mobile Dispensaries, and Staff Dispensaries. These provide a general practitioner type of service.

The attendances at the two Outpatient Services are given in the Tables that follow. In Table 74 are given the attendance figures at the Outpatient Dispensaries and in Table 75 are the attendances of outpatients at the hospital and clinics. The drop in attendances recorded last year in both services were shown again in the attendance figures this year. In the hospital clinics this has been due to the screening of patients at the Emergency Unit. The Units themselves have been more discriminating in the follow-up of cases and a large number of patients are being sent to the Outpatient Dispensaries for continuation of treatment.

In the Outpatient Dispensaries there was a drop initially in attendances in the 26 paying Outpatient Dispensaries when charges were introduced on the re-organisation of the services on 1st August, 1964. This quickly rose and attendances had shown gradual increase again.

TABLE 74

ATTENDANCES AT OUTPATIENT DISPENSARIES

<i>Dispensaries</i>	1962	1963	1964	1965 <i>New</i>	<i>Repeats</i>	<i>Injections and Dressings</i>	<i>Total</i>
Govt. Outpatient Dispensaries ..	2,744,744	2,773,663	1,890,744	382,122	854,455	456,201	1,692,778
Travelling Dis- pensaries ..	195,967	199,154	172,202	49,132	119,275	13,575	181,982
Staff Clinics ..	131,525	194,723	270,911	111,955	28,082	27,002	167,039
Total ..	3,072,236	3,167,540	2,333,857	543,209	1,001,812	496,778	2,041,799
Rate of Attend- ances per 1,000 population ..	1,777	1,778	1,280	—	—	—	1,090
Mid-year popula- tion in brackets	(1,732,800)	(1,775,200)	(1,820,000)	—	—	—	(1,864,900)
<i>Institutional Outpatients</i>							
Police Training School ..	—	—	—	2,598	17,399	19,851	39,848
Police Families Clinic ..	—	—	—	574	24,232	219	25,025
Local Prison Hospital ..	—	—	—	613	12,976	4,958	18,547
Changi Prison Hospital ..	—	—	—	1,993	36,431	11,842	50,266
Total ..	—	—	—	5,778	91,038	36,870	133,686

TABLE 75

ATTENDANCES AT HOSPITAL OR HOSPITAL UNIT CLINICS

<i>Clinics</i>	1962	1963	1964	1965
Outram Road General Hospital ..	434,347	367,401	324,587	305,399
Emergency Unit ..	—	—	—	71,927
Thomson Road General Hospital ..	8,874	13,752	18,895	24,662
Kandang Kerbau Hospital ..	189,552	170,148	143,721	154,840
Tan Tock Seng Hospital ..	478,701	350,905	295,911	283,147
Middle Road Hospital ..	197,594	185,890	191,765	197,633
Trafalgar Home ..	11,345	13,148	9,457	17,210
Woodbridge Hospital ..	16,668	20,655	20,558	24,086
Total ..	1,337,081	1,121,899	1,004,894	1,078,904
Rate of Attendances per 1,000 of population ..	770	630	550	540
Mid-year population given in brackets	(1,732,800)	(1,775,200)	(1,820,000)	(1,864,900)

Staff Matters

The gradual improvement in the establishment over the last five years of medical officers is shown in the graph (Table 66). Almost every grade of professional and technical staff in the establishment had been steadily filling. The establishment of Medical Officers has now reached nearly 90 per cent of the total establishment and the Nurses are also up to 90 per cent of its establishment (See Table 65 and 67). It is also significant that the staff is made up almost entirely of local persons.

A Nurses Week was held for the first time and the celebrations were spread over a week from 10 to 16 May. The dates were chosen to coincide with the commemoration of the birthday of Florence Nightingale. The highlight of the Week was a combined graduation ceremony held on the 12th May in the National Theatre. The presentation of certificates was made by Puan Noor Aishah.

The Nursing Service participated in the exhibition of "Careers and Hobbies Exhibition" held at the Victoria Memorial Hall in September, 1965.

During the year, hearings in the Industrial Arbitration Court were held on the claims by Nurses for improvements in their terms and conditions of service and these hearings were not completed by the end of the year.

Staff Training

Even in the worst day of staff shortages training of the staff both overseas and locally continued unabated. This had paid off in the long term as the majority of specialists now in the service were trained under these schemes.

Singapore has been a centre for the course leading to the Primary Examinations for the Fellowship of the Royal Australian College of Surgeons and also since 1964, the centre for the written examinations for the membership of the Australasian College of Physicians. These have stimulated interest in these higher qualifications and have been of assistance in producing more officers with these higher qualifications.

During the period, two new departmental training schemes were established: the School for Radiographers in 1st October, 1963. This School has a capacity for training up to 20 students for the two-year training course. The first graduating class of nine completed their training in December, 1965.

The other was the training school for Assistant Nurses (Psychiatry) which began at Woodbridge Hospital in 1962. This training was in addition to the existing nurse training programmes in Psychiatric Nursing now given as a post-basic and basic-nurse training courses. The training of this new nursing grade was important as the Assistant Nurses in Psychiatry will in the future provide the bulk of the nursing services for mental patients at Woodbridge Hospital.

Various post-basic nurse training courses such as Pædiatric Nursing, Ward administration, Operation Theatre Nursing were also established during this period.

Tables 77 and 78 show the departmental training and training courses undertaken during the year.

TABLE 76

PROFESSIONAL PERSONNEL — DECEMBER 1965
(Hospitals Division)

<i>Designations</i>				<i>Approved Establishment</i>	<i>Total No. Filled</i>	<i>University Officers</i>
Superscale: Administrative	..	..	..	9	7	—
Specialists	..	..	..	43	34	13
Senior Registrars	..	..	..	62	40	19
Medical Officers	..	..	..	257	232	—
Housemen	..	..	..	55	69	—
<i>Nursing Staff</i>						
Matron, Grade I	..	..	..	4	3	—
Matron, Grade II	..	..	..	13	13	—
Senior Sister Tutor	..	..	..	1	1	—
Sister Tutors/Nursing Officer Tutor	..	..	..	19	17	—
Nursing Officers, Grade II (Man)	..	..	..	1	1	—
Sisters	..	..	..	224	203	—
Charge Nurses	..	..	..	30	24	—
Staff Nurses and Student Nurses	..	..	..	1,450	1,328	—
Male Nurses and Student Male Nurses	..	..	..	261	226	—
Senior Assistant Nurses	..	..	..	7	7	—
Assistant Nurses	..	..	..	945	930	—
Assistant Nurses (Psychiatric)	..	..	..	100	91	—
Chief Nurse (Man) Div. II	..	..	..	1	1	—
Senior Nurse (Man) Div. II	..	..	..	1	1	—
Nurse (Man) Div. II	..	..	..	11	10	—
Senior Midwives	..	..	..	4	4	—
Staff Midwives	..	..	..	157	157	—
Pupil Midwives	..	..	..	230	185	—

TABLE 76—*continued*PROFESSIONAL PERSONNEL — DECEMBER 1965—*continued*
(Hospitals Division)

<i>Designations</i>	<i>Approved Establishment</i>	<i>Total No. Filled</i>	<i>University Officers</i>
<i>Nursing Staff—contd.</i>			
Senior Pharmacist	2	1	—
Pharmacists	23	24	—
Senior Dispensing Assistants	10	9	—
Dispensing Assistants	94	92	—
Chief Hospital Assistant	3	3	—
Hospital Assistant Special Grade	14	11	—
Hospital Assistant	37	32	—
Senior Laboratory Technician	1	1	—
Laboratory Technicians	106	106	—
Superintendent Radiographer	1	1	—
Senior Radiographers	2	2	—
Radiographers	45	26	—
Senior Physiotherapists	1	1	—
Physiotherapists	20	20	—
Senior Occupational Therapist	1	1	—
Occupational Therapists	12	12	—
Senior Almoner	1	1	—
Almoners	31	21	—
Chief Dietitian	1	1	—
Dietitians	6	5	—

TABLE 77

NUMBERS IN DEPARTMENTAL TRAINING

	<i>Total No. in School in 1965</i>	<i>Admitted in 1965</i>	<i>Completed Training in 1965</i>
Student Nurses, Nurses' Training School, General Hospital	681	154	221
Pupil Assistant Nurses, Assistant Nurses' Training School, Thomson Road Hospital	237	110	141
Pupil Assistant Nurses, Psychiatric Nursing School	65	28	23
Pupil Midwives	174	87	50
Radiographers	18	11	10
Laboratory Technicians	52	9	5
Dispensing Assistants	48	10	21

TABLE 78

TRAINING COURSES

	1960	1961	1962	1963	1964	1965
Government Fellowships	12	6	5	4	3	6
Colombo Plan Awards	—	—	—	—	13	22
W.H.O. Fellowships	—	1	4	2	4	9
Others	1	—	—	—	1	2

EXPENDITURE AND REVENUE

Table 79 gives the actual expenditure of the institutions in the Division. This amounted to a total of \$37,937,740.32 which was 56 per cent of the total Ministry's expenditure for the year and represented 11 per cent of the total budget for Singapore.

For comparison, the expenditure on the Division in the previous years is given in Table 80 and the actual revenue collected for the year is given in another Table.

TABLE 79

PROVISIONAL STATEMENT OF ACTUAL EXPENDITURE IN RESPECT OF HOSPITALS DIVISION FOR THE YEAR 1965

<i>Name of Institutions</i>			<i>Personal Emoluments</i>	<i>Other Charges, Annually Recurrent</i>	<i>Other Charges, Special Expenditure</i>
			\$ c.	\$ c.	\$ c.
1.	Headquarters	.. ..	234,282 09	33,064 39	—
2.	General Hospital	.. ..	9,832,667 45	3,456,904 48	123,465 23
3.	Outpatient Services	.. ..	2,850,453 09	971,888 18	210,302 34
4.	Blood Transfusion Service	.. ..	180,175 62	43,838 70	137,589 87
5.	Chronic Hospital	.. ..	226,222 15	53,700 31	—
6.	Kandang Kerbau Hospital	.. ..	3,215,540 74	1,086,396 54	48,351 26
7.	Middleton Hospital	.. ..	689,854 66	304,222 27	9,303 21
8.	Social Hygiene	.. ..	456,135 87	119,631 72	1,031 99
9.	St. Andrew's Orthopaedic Hospital		220,160 41	90,100 71	1,889 36
10.	Tan Tock Seng Hospital	.. ..	4,655,533 31	1,723,050 67	23,625 10
11.	Thomson Road General Hospital		1,460,303 43	431,942 98	6,931 41
12.	Trafalgar Home	.. ..	382,221 48	715,875 26	7,234 97
13.	Woodbridge Hospital	.. ..	2,721,700 62	1,209,292 61	2,855 84
			27,125,250 92	10,239,908 82	572,580 58

Total: \$37,937,740.32

TABLE 80

STATEMENT OF EXPENDITURE FOR THE YEARS 1962, 1963, 1964 AND 1965

	1962		1963		1964		1965	
	Provision		Provision		Provision		Provision	
	\$	c.	\$	c.	\$	c.	\$	c.
<i>Headquarters</i>								
Personal Emoluments ..	2,793,300 00	2,470,791 00	2,927,230 00	2,898,282 00	3,122,212 00	3,328,680 00	3,344,564 00	
Other Charges, Annually Recurrent ..	762,090 00	823,293 00	836,340 00	720,365 00	364,959 00	798,000 00	580,620 00	
Other Charges, Special Expenditure ..	348,810 00	104,166 00	218,278 00	95,132 00	122,780 00	115,630 00	92,917 00	
Total ..	3,904,200 00	3,398,250 00	3,981,840 00	3,713,779 00	3,609,951 00	4,242,310 00	4,018,101 00	
<i>Hospitals Division</i>								
Personal Emoluments ..	23,294,310 00	20,840,231 43	24,332,350 00	23,520,189 36	25,053,476 00	26,595,000 00	27,125,250 92	
Other Charges, Annually Recurrent ..	11,632,350 00	9,421,109 50	10,754,140 00	9,707,492 41	9,809,339 00	10,649,860 00	10,239,908 82	
Other Charges, Special Expenditure ..	526,480 00	172,359 82	418,650 00	345,079 03	313,741 00	660,860 00	572,580 58	
Total ..	35,453,140 00	30,433,700 75	35,505,140 00	33,572,760 80	35,176,556 00	37,905,720 00	37,937,740 32	
<i>Public Health Division</i>								
Personal Emoluments ..	5,992,050 00	5,761,746 23	6,135,250 00	6,273,045 70	6,443,336 00	6,730,000 00	6,620,937 00	
Other Charges, Annually Recurrent ..	17,037,130 00	15,546,332 78	17,016,860 00	16,059,463 80	16,503,535 00	17,750,170 00	16,788,210 00	
Other Charges, Special Expenditure ..	587,110 00	594,212 22	568,120 00	490,172 51	550,981 00	694,030 00	814,091 00	
Total ..	23,616,290 00	21,902,291 23	23,720,230 00	22,822,682 01	23,497,852 00	25,174,200 00	24,223,238 00	

TABLE 80—continued
STATEMENT OF EXPENDITURE FOR THE YEARS 1962, 1963, 1964 AND 1965

	1962		1963		1964		1965	
	Provision	Actual	Provision	Actual	Provision	Actual	Provision	Actual
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
<i>Chemistry</i>								
Personal Emoluments ..	477,380 00	377,963 00	474,150 00	444,432 00	468,320 00	427,236 00	466,000 00	431,801 00
Other Charges, Annually Recurrent ..	67,450 00	49,859 00	59,330 00	57,289 00	56,680 00	56,690 00	56,680 00	49,111 00
Other Charges, Special Expenditure ..	4,100 00	4,306 00	7,600 00	7,552 00	4,000 00	3,555 00	1,540 00	1,519 00
Total ..	548,930 00	432,128 00	541,080 00	509,273 00	529,000 00	487,481 00	524,220 00	482,431 00
Total Expenditure: MINISTRY OF HEALTH		56,166,369 98		60,618,494 81		62,771,840 00		66,661,510 32
% Expenditure Hospitals Division: Ministry ..		54%		55%		56%		57%
Cost of Hospital Services per head of population ..		\$17.5		\$18.8		\$19.3		\$20.4
Midyear population given in brackets ..		(1,732,800)		(1,775,200)		(1,820,000)		(1,864,900)

LEGISLATION

The Medical (Therapy, Education and Research) Act was passed by Parliament on 31st December, 1965, and the President gave his assent on 3rd January, 1966. The Act provides for the use of parts of bodies of deceased persons for the purpose of treatment (e.g. Corneal grafting), medical education (e.g. dissection of bodies for anatomy instruction), research (e.g. histological examination of tissues), and for the post-mortem examination of bodies.

The removal of a part of a body or its examination after death can be made at the request by the deceased person or by the person who has lawful possession of the body after death on condition that the request was not withdrawn by the deceased before death and that there was no objection by any surviving relative for such procedures to be undertaken.

Chapter Sixteen

OUTRAM ROAD GENERAL HOSPITAL

THE hospital is now known as the Outram Road General Hospital to distinguish it from the other general hospital at Thomson Road. It retains its premier position by virtue of being an older institution with well established departments; a teaching centre for medical and dental students; nurses and other ancillary services.

In association with the Faculty of Medicine, University of Singapore, the hospital provides training facilities for medical and dental students. Facilities are also provided for the training of student nurses, Laboratory Technicians, Dispensing Assistants and Radiographers. Post-Basic Courses are also conducted for trained Nurses in Ward Administration, Pædiatric Nursing and Operating Theatre Techniques.

The Clinical Units of the hospital are the two General Surgical Units, two Orthopædic Units, two Medical Units, two Pædiatric Units, an Eye Unit and an Ear, Nose and Throat Unit. The other departments and ancillary services are represented by the Radiology and Radiotherapy Departments, the Anæsthetic Department, the Biochemistry Department, the Clinical Laboratories, Dispensaries, Physiotherapy Department, Occupational Therapy Department, Artificial Limb Workshop, an Almoner's Service and the Dietary and Catering Services.

Situated within the hospital are the Blood Transfusion Services, Pathological Services, Department of Dentistry and the Dental School.

Development

The following development projects and renovations were carried out during 1965:

Medical Unit III.—Alterations to the section of Bowyer Block allocated for this Unit were completed in 1965 and the Unit was officially declared open on 30th April, 1965, by Mr. Sia Kah Hui, Parliamentary Secretary, Ministry of Health.

The Unit has a bed complement of 146, but only 80 were staffed when it was opened for patients on 3rd May, 1965. The opening of these wards increases the beds in the General Hospital to 1,278.

Central Laboratory.—Re-flooring with mosaic tiles was completed during the year and new work benches with formica tops have been provided.

Renal Laboratory and Artificial Kidney Unit.—New accommodation was provided for this Unit in the attic of Ward 15. The unit is now air-conditioned. The official opening of this unit by Mr. Sia Kah Hui, Parliamentary Secretary, Ministry of Health was scheduled to take place early next year.

Wards 41A and 41B.—Alterations to these wards were carried out to provide separate rooms for patients requiring special nursing care as well as a duty room for nursing personnel.

Government Officials' Outpatient Services.—Toilet facilities in this section were improved.

E.N.T. Unit.—In this Unit part of the verandah of Ward 35 was converted into a Nurses' duty station. Changing rooms were also provided for medical and nursing staff. The office of the Head of the Unit was air-conditioned.

Air-Conditioning of 'A' Class Accommodation.—The rates for 'A' class accommodation is determined on whether the patient is accommodated in air-conditioned or non-airconditioned room. To meet the demand for air-conditioned rooms in the Medical Units, six 'A' class rooms in Ward 45 and four in Ward 23 were air-conditioned during the year.

Air-Conditioning of Rooms in the Free Wards.—One room in each of the free wards (Wards 19 and 21) in Medical Unit II was also air-conditioned for use by very ill patients requiring special treatment and nursing care.

Activity

During the year 42,582 patients were admitted to the hospital compared with 43,795 in 1964 and 47,826 in 1963. The drop in admissions can be attributed to the better screening of cases by the Emergency and the Clinical Units of the Hospital. More and more patients who are not actually ill and who do not require inpatient treatment are followed up in the Outpatient Dispensaries. Some of the less acutely ill medical cases seen at the various outpatient departments of the hospital were referred for admission to the Tan Tock Seng Hospital and Thomson Road General Hospital. These hospitals receive medical cases from this hospital between 8.30 a.m. and 3 p.m. in accordance with a monthly roster.

Outpatients

There has been a general reduction in the number of outpatient attendances in the Clinical Units during the year. The total outpatient attendance in 1965 including attendances for dressings and injections was 361,656 compared to 432,352 in 1964. Patients are being referred to the Outpatient Dispensaries for follow-up as well as for dressings and injections.

HIGHLIGHTS OF THE YEAR

Cardiac Surgery

The first cardiac by-pass procedure, a closure of an atrial septal defect was done in January. Since then a total of 14 patients with various congenital heart defects were operated on with one death. The first operation was done with the assistance of Dr. Y. Mc. Goon of the Mayo Clinic. All members of

the team including nursing staff, Laboratory Technicians are to be congratulated on their energy and enterprise in introducing this procedure to the repertoire of surgery in Singapore.

The number of cases that can be performed are limited as the team was relatively inexperienced, and the officers could not devote their full time to these operations. Further, the operation theatre and the supporting post-operative facilities had to be shared with the normal work carried out in the Surgical Unit.

In 1965, a selected number of patients were sent to Perth in Western Australia where these operations were undertaken. These were made under a scheme in which the costs of the operations and the hospital care of the patients were borne entirely by the Government of Western Australia while the fare was paid by philanthropic organisations in Singapore. A total of five patients had been sent to Perth by the end of the year. Out of five patients, one died after operation.

Kernicterus

Kernicterus in newborn infants was the commonest cause of death, and was responsible for the third highest cause of deaths in children up to 10 years of age up to 1964. A scheme for prevention of Kernicterus was undertaken by the professorial Pædiatric Unit in 1965 following its research into the disease in Singapore over the last three years. The scheme consisted of the examination of the blood of every infant born in the Kandang Kerbau Maternity Hospital (for G6PD Deficiency). Infants showing these deficiencies were detained in the hospital for observation and exchange blood transfusion if this became necessary.

As a result of this mortality, Kernicterus dropped to sixth place in 1965. Only eight infants died of this disease in 1965 compared with 29 in 1964. Most of the deaths were due to non co-operation of the parents or in babies born outside of the hospital.

It is possible that a total eradication of this disease in Singapore can be achieved if every baby born in Singapore can be screened. This will require dissemination of knowledge to every mother and that there are adequate number of doctors and technicians to carry out the necessary investigations.

Institute of Medical Specialities

The foundation stone for the Institute of Medical Specialities was laid by Dato Lee Kong Chian on 27th November, 1965. The establishment of this Institute will mark the beginning of a new chapter in the progress of medicine in Singapore. The Institute will be a nine-storey building including such specialities as Radiotherapy, Radio-isotope treatment, cytology and human genetics, hæmatology, cardiovascular surgery and cardiology, neurology and neuro-surgery, renal unit, dermatology as well as specialised operating theatres, seminar rooms and lecture halls.

Clinical Units

The Clinical Units of the hospital and their Heads of Departments are as follows :

Surgical Unit <i>A</i>	—	Professor L. F. Tinckler, M.B., Ch.M., L.R.C.P. F.R.C.S., D.T.M.H.
Surgical Unit <i>B</i>	—	*Mr. Y. Cohen, F.R.C.S., F.R.A.C.S.
Surgical Unit <i>C</i> (Orthopaedic)	—	Professor D. R. Gunn, M.B., Ch.B., M.Ch. (Orth.) F.R.C.S. (Ed.)
Surgical Unit <i>O</i> (Orthopaedic)	—	Mr. D. W. C. Gawne, M.A., M.D., M.R.C.S. (Ldn.) F.R.C.S. (Ldn.), L.R.C.P., M.B., Ch.B.
Medical Unit I	—	Professor G. A. Ransome, F.R.C.P., M.R.C.S.
Medical Unit II	—	Professor Khoo Oon Teik, L.M.S., M.D., M.R.C.P. (Ed.), F.R.C.P. & S.
Medical Unit III	—	Dr. Gwee Ah Leng, L.M.S., M.R.C.P., M.D.
Ophthalmic Unit	—	Mr. Robert Loh Choo Kiat, F.R.C.S., D.O.M.S.
E.N.T. Unit	—	Mr. Goh Ewe Hong, M.B., B.S., F.R.C.S. (Ed.) F.R.A.C.S. (Acting).
Paediatric Unit (West)	—	Professor Wong Hock Boon, M.B.B.S., D.C.H., M.R.C.P.E.
Paediatric Unit (East)	—	Dr. Tan Kwang Ho, M.B.B.S. (HK), M.R.C.P. (Ed.) D.C.H. (Acting).
X-ray (Diagnostic)	—	Dr. F. Y. Khoo, D.M.R.D.
X-ray (Therapeutic)	—	Dr. Chia Kim Boon, D.M.R.T.
Anaesthetic Unit	—	Dr. B. E. G. D’Bras, F.F.A.R.C.S.
Medical Superintendent	—	Dr. S. N. Kapur.

* On leave for 6 months to take up appointment as Visiting Professor of Surgery, University of Tel-Aviv.

AVERAGE DAILY COST PER PATIENT INCLUDING DIET

				\$	c.
Paying Class <i>A</i>	..	..	..	33	62
Paying Class <i>B</i>	..	..	..	32	87
Free patient	..	..	..	31	68
Children ..	..	..	..	31	55

AVERAGE DAILY COST OF DIET PER PATIENT

				\$	c.
Paying Class <i>A</i>	..	..	..	3	04
Paying Class <i>B</i>	..	..	..	2	29
Free patient	..	..	..	1	10
Children ..	..	..	..	0	97

Hospital Statistics

Statistics of hospital activity are provided in Tables 81 and 82.

TABLE 81
UNIT ACTIVITY 1965

Unit	Bed Complement	Average Daily Number of Available Beds	Average Daily Bed Occupancy	Average Percentage Occupancy	Discharges and Deaths	Average Length of Stay	Turnover per bed	Deaths	Percentage of deaths to total Discharges and Deaths	Total Patient Days
Medical Unit I ..	106	106	127	119.81%	4,083	12	38	459	11.37%	46,494
Medical Unit II ..	131	131	132	100.76%	4,459	11	34	526	11.80%	48,186
Medical Unit III* ..	146	80	56	70.00%	948	14	12	115	12.13%	13,626
Surgical Unit 'A' ..	152	152	155	101.97%	7,128	8	47	313	4.39%	56,508
Surgical Unit 'B' ..	175	175	148	84.57%	6,241	9	36	288	4.61%	54,102
Orthopaedic Unit 'C'	97	97	96	98.97%	2,833	12	29	64	2.26%	34,961
Orthopaedic Unit 'O'	57	57	72	126.32%	1,748	15	31	43	2.46%	26,278
E.N.T. Unit ..	60	60	41	68.33%	1,342	11	22	61	4.55%	14,992
Ophthalmic Unit ..	72	72	74	102.78%	2,025	13	28	7	.35%	27,017
Pædiatric Unit (East)	141	141	92	65.25%	5,648	6	40	246	4.36%	33,590
Pædiatric Unit (West)	141	141	95	67.38%	6,076	6	43	233	3.83%	34,668

*Medical Unit III open on 30th April, 1965.

TABLE 82
OUTPATIENT ATTENDANCES, 1965

		OUTPATIENT ATTENDANCES			
Specialists' Unit		New Cases	Re-Attendances	Total	Injections and Dressings
Medical Unit I	..	1,181	22,606	23,787	8,932
Medical Unit II	..	1,703	22,874	24,577	9,470
Medical Unit III	..	397	3,005	3,402	293
Surgical Unit <i>A</i>	..	14,301	33,017	47,318	8,435
Surgical Unit <i>B</i>	..	8,232	8,001	16,233	1,698
Orthopaedic Unit <i>C</i>	..	8,929	25,437	34,366	8,839
Orthopaedic Unit <i>O</i>	..	6,522	24,760	31,282	7,442
E.N.T. Unit ..	..	7,400	19,052	26,452	4,776
Ophthalmic Unit	..	9,237	39,957	49,194	—
Paediatric Unit (East)	..	6,204	16,929	23,133	3,096
Paediatric Unit (West)	..	6,074	19,581	25,655	3,266
Total ..		70,180	235,219	305,399	56,247

EMERGENCY UNIT, GENERAL HOSPITAL

The Outpatients Department was removed to Maxwell Road on 1st August, 1964, and the hospital Casualty and Outpatients was utilised as an Emergency Unit.

The Emergency Unit was formed to treat serious medical and surgical cases requiring immediate hospital treatment; and in times of national emergency is converted for the treatment of acute traumatic cases.

The Unit undertakes the preliminary treatment of patients so that they may arrive at the specialist departments with a minimal delay. Acute traumatic cases can be given immediate resuscitation treatment before being sent to the wards.

It prevents the entry of sepsis into the hospital, by treating septic cases as far as possible in the Emergency Unit, and undertakes preliminary investigations of patients thus lessening hospital admissions. The formation of the Unit has led to a fall in admissions.

Outpatient attendances have also fallen by approximately sixteen per cent in the same period. This particularly applies to the traumatic — orthopaedic department where the outpatient attendances have been reduced even more; twenty per cent.

Most Police cases were brought to the unit (Tables 83 and 84). Unfortunately, many of these are minor cases, which should be treated elsewhere. The number of police cases treated in the Emergency Unit during the year was over seven thousand (7,347). Of these nearly five thousand (4,837) were minor conditions which could be treated in the Outpatient Dispensaries. The wastage in policeman's time and transport in bringing these patients from all over the island to the General Hospital must be great.

The total number of attendances (Tables 85 and 86) in the Emergency Unit approximates to an average of six thousand per month. This represented a reduction of one fifth of the number of patients attending in 1963. Of this number, fifty per cent were not emergencies. A third of the non-emergencies attend the hospital after office hours (5 p.m.).

TABLE 83

OUTPATIENTS, EMERGENCY UNIT, GENERAL HOSPITAL

Nationalities	NEW CASES				RE-ATTENDANCES			
	Male	Female	Children	Total	Male	Female	Children	Total
Malays and Other Malaysians ..	4,292	1,056	1,671	7,019	471	87	92	650
Chinese ..	26,052	11,182	9,633	46,867	2,844	1,148	510	4,502
Indians, Pakistanis and Ceylonese ..	7,449	1,238	1,699	10,386	1,044	108	110	1,262
Others ..	735	226	206	1,267	48	14	12	74
Total ..	38,528	13,702	13,209	65,439	4,407	1,357	724	6,488

Number of Dressings: 14,086.

Number of Injections: 43,956.

This large attendance after office hours has three basic causes. The shutting of general practitioners' offices at this time, and the closing of Outpatient Dispensaries leave only the General Hospital available, where medical treatment can be obtained. The second and third are economic. Large families prevent the mother from bringing a sick child to hospital until father returns from work; while others delay attendance until evening, in order to take advantage of the free treatment at the hospital.

The largest attendances of non-emergencies are always on week-ends and public holidays when the number of attendances are doubled, regularly rising to five or six hundred per day. This is due to the general lack of medical facilities during these periods which are only available at the General Hospital.

Although stability has been reached during the past four months, it is still subject to relapse at short notice. This is due to the lack of understanding on the part of the medical profession and the public, for the necessity for decentralising patients from the hospitals; so that the hospitals can carry out their essential service in the specialised departments, without being overburdened by having to spend time in dealing with trivial complaints.

TABLE 84

MONTHLY ANALYSIS OF POLICE CASES SEEN, TREATED AND ADMITTED INTO HOSPITAL

—	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Classification of Diseases:												
1. Minor Traumas ..	70	37	47	69	65	85	80	68	134	119	121	79
2. Bruises ..	327	95	120	164	171	174	233	186	176	139	122	158
3. Drunks ..	147	62	104	138	125	84	137	119	105	143	85	122
4. Bites ..	12	..	14	20	14	9	15	26	14	9	12	8
5. N.A.D. ..	25	11	16	20	24	21	32	23	32	37	21	22
Total ..	581	205	301	411	399	373	497	412	461	447	361	389
Major Cases:												
1. Requiring Sutures ..	93	80	109	113	109	137	114	177	75	114	138	185
2. Mental ..	47	30	35	39	37	26	70	50	56	36	39	35
3. Poisoning ..	..	..	1	1	1	..	1	..	2	..	..	..
4. Drug Addiction ..	..	..	4	2	5	2	2	1	3	2	..	..
5. Medical Cases ..	3	5	12	10	17	14	14	11	15	14	12	9
6. Others (Rape, Burns Suicide, etc.) ..	..	1	2	3	3	10	2	6	6	5	4	9
7. Admissions ..	3	11	9	9	12	7	9	13	10	10	4	6
Total ..	146	127	172	177	184	196	212	158	167	181	197	244

TABLE 85
POLICE CASES ATTENDED IN EMERGENCY UNIT — 1965

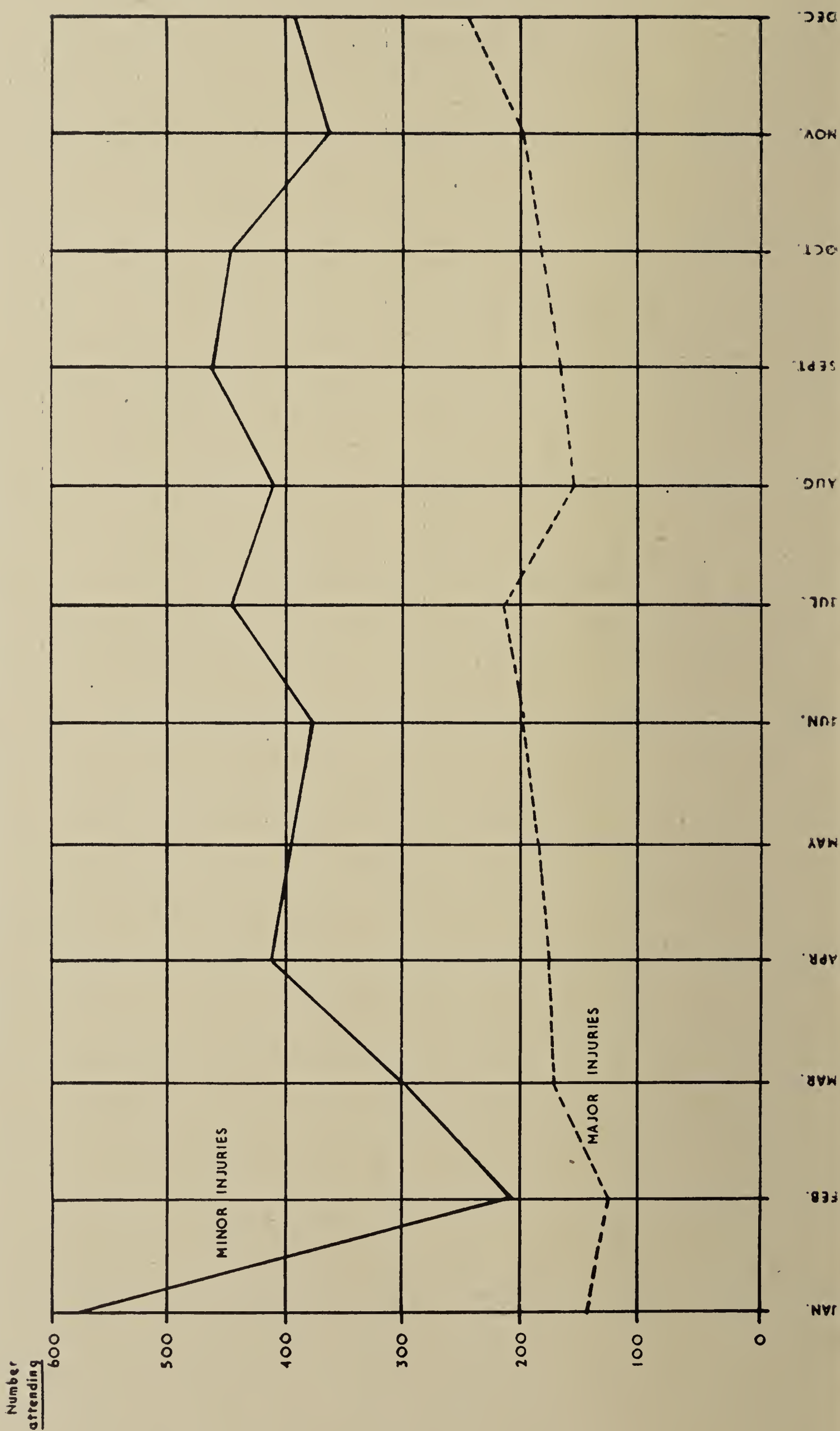
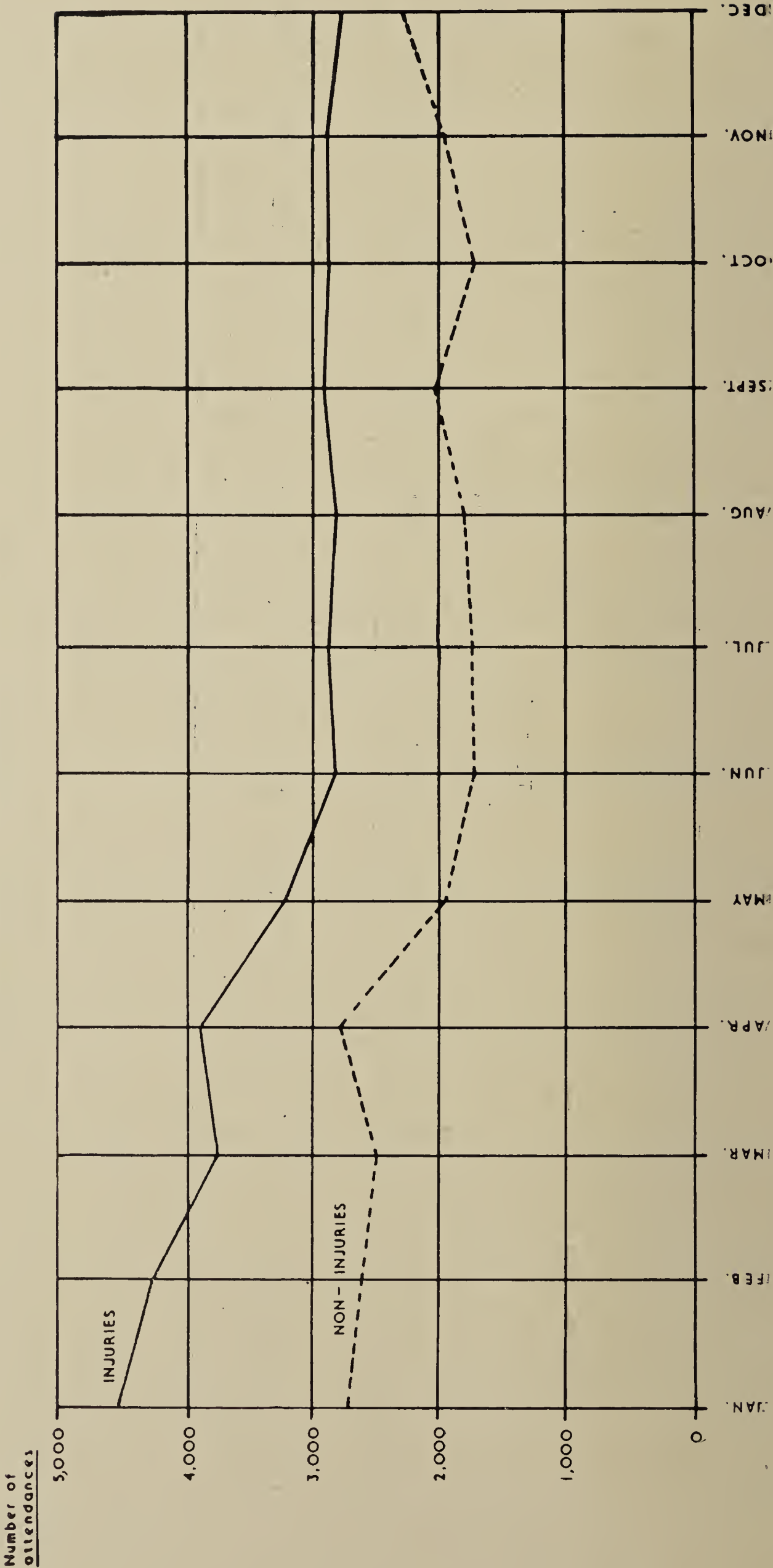


TABLE 86
ATTENDANCES AT EMERGENCY UNIT, 1965

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Injuries—New ...	4,524	4,273	3,746	3,900	3,222	2,804	2,883	2,837	2,909	2,898	2,847	2,754
Injuries—Re-attendances ..	485	545	684	645	469	405	471	420	480	502	600	782
Non-injuries—New ..	2,701	2,624	2,505	2,792	1,934	1,766	1,730	1,806	2,015	1,751	1,950	2,268

TABLE 87
ATTENDANCES — EMERGENCY UNIT — 1965



ANÆSTHETIC UNIT

The Head of the Anæsthetic Unit is Dr. B. E. G. D'Bras. The Unit provides the anæsthetic service for all the surgical theatres in the hospitals. This Unit has had to expand to keep pace with the opening of the Surgical theatres. In 1965, the new Surgical Unit at Thomson Road Hospital went into operation which called for more Anæsthetists to be posted there. The Operation Theatre at Trafalgar Home also required an Anæsthetist.

Development of Operating Theatres not only made demands in the numbers of Anæsthetists but the increasing complexity of surgical operations required specially-trained anæsthetists. An example was the establishment of cardiac surgery where the anæsthetists had to have special training and experience in this field.

The Anæsthetic Unit was responsible for the treatment of patients suffering from tetanus, the resuscitation and management of narcotic poisoning, chest injuries and respiratory failure.

The following table is a record of the different types of Anæsthetic given for various surgical procedures:

TABLE 88

Unit		General	Spinal	Epidural	Caudal	Local	Total	Major	Minor	Chest
'A' Theatre	..	2,986	596	2	255	1,154	4,993	2,713	2,280	157
'B' Theatre	..	2,668	587	13	53	1,413	4,734	2,808	1,926	160
'C' Theatre	..	2,387	153	—	28	1,507	4,075	1,946	2,129	—
E.N.T.	..	895	—	—	—	2,505	3,400	1,304	2,096	—
Eye ..	..	496	—	—	—	—	496	496	—	—
Dental	..	3,699	—	—	—	—	3,699	60	3,639	—
X-Ray	..	58	—	—	—	—	58	58	—	—
K. K. Hospital	..	4,243	160	8	333	1,224	5,968	2,280	3,688	—
Thomson Road General Hospital		1,152	769	1	393	823	3,138	1,804	1,334	—
Total	..	18,584	2,265	24	1,062	8,626	30,561	13,469	17,092	317

LABORATORY SERVICES

The Laboratory Services in the General Hospital are provided in the Clinical Laboratories and in the laboratories of the Institute of Pathology. In line with the aim to bring professional control over the work in these laboratories, a re-organisation of the service was carried out during the year.

The work in the laboratories was apportioned as follows: the routine and simpler examinations were done in the Clinical Laboratories, the more complex in the Central Laboratory. The Laboratory had been formerly a Clinical Laboratory for the Medical Unit I, but had been renovated and extended and formed as the Central Laboratory for the hospital. The special and more intricate investigations are done in the special laboratories for Biochemistry, Bacteriology in the Institute of Pathology and Hæmatology in the Blood Transfusion Centre.

The control of the work was placed under the three main Heads: the biochemical examinations were under the Biochemist, the bacteriological work was under the Bacteriologist, and blood examinations under the Hæmatologist in the Blood Transfusion Centre. For convenience, the Hæmatologist, who was also the Medical Officer-in-charge of the Blood Transfusion Service, was responsible for the work in the Clinical Laboratories as from 1st November, 1965. The total laboratory examinations conducted in the Clinical Laboratories during the year were as follows:

Central Laboratory (Previously known as Clinical Laboratory I)	..	..	239,374
Clinical Laboratory II	..	..	53,210
Clinical Laboratory III	..	..	7,384
Clinical Laboratory 'B' Unit	..	..	31,240
Clinical Laboratory Paediatric Unit		..	65,649
Total	..		396,857

PHYSIOTHERAPY DEPARTMENT

For the first time, the department was working with its full complement of 21 Physiotherapists. The Head of the department was Miss Lim Peck Ngoh. With adequate staff more work was possible, the service could be extended and patient care was improved.

The Physiotherapy Departments in the Kandang Kerbau Hospital, Tan Tock Seng Hospital and Trafalgar Home were enlarged. The service was resumed at the Tanah Merah Red Cross Home until the Red Cross Society was able to obtain the services of its own full-time Physiotherapist.

On 23rd June, 1965, a Paraplegic Table-tennis tournament was organised by the department financially backed by the newly formed Society for Aid to the Paralysed. Swimming lessons were also given to the paraplegics in the Farrer Park Swimming Pool and at the Army Swimming Pool.

The courses of treatment has increased and reflects the improvement in the establishment in the department:

			1963	1964	1965
General Hospital:					
New Cases	..	..	6,904	7,418	7,878
Repetitions	..	..	78,143	80,710	96,408
Tan Tock Seng Hospital:					
New Cases	..	..	—	768	893
Repetitions	..	..	—	15,263	20,125
Middleton Hospital:					
New Cases	..	..	—	73	62
Repetitions	..	..	—	3,284	4,208
Kandang Kerbau Hospital:					
New Cases	..	..	—	2,295	1,782
Repetitions	..	..	—	4,890	4,000
Thomson Road General Hospital:					
New Cases	..	..	362	757	737
Repetitions	..	..	5,681	7,134	11,644
Trafalgar Home:					
New Cases	..	..	—	15	144
Repetitions	..	..	—	858	8,541

			1963	1964	1965
Chronic Sick Hospital:					
New Cases	..	..	—	11	262
Repetitions	..	..	—	1,380	4,538
St. Andrew's Orthopaedic Hospital:					
New Cases	..	..	54	89	102
Repetitions	..	..	1,065	6,701	4,237
Spastic Centre:					
New Cases	..	..	—	—	—
Repetitions	..	..	—	1,000	2,000
Tanah Merah Crippled Home:					
New Cases	..	..	—	—	—
Repetitions	..	..	—	—	398
All Hospitals:					
New Cases	..	..	10,111	11,771	11,850
Repetitions	..	..	116,157	120,816	154,061

The above figures show a steady increase in the number of treatment given both in General Hospital and all hospitals during the last few years.

OCCUPATIONAL THERAPY DEPARTMENT

The Head of the department was Miss Joyce K. L. Lim. All 13 posts of Occupational Therapists were filled in the year. With a full establishment it was possible to widen the scope of the service.

Work with long-term patients in the Kandang Kerbau Hospital was resumed in October. Work was also extended to the St. Andrew's Orthopaedic Hospital. Previously the work with the children had been provided by volunteer workers. After assuming responsibility for the service in this hospital two picnics were organised for the children.

The Occupational Therapists were also able to continue working with the spastic children and the articles made by these children found a ready sale which realised a good profit for the Spastic Association.

The department's own Annual Sale was held on 1st November. The proceeds from the sale amounted to \$1,563 which was nearly \$400 more than the collection in the previous year.

The scheme for training and rehabilitation of the disabled under the Labour Department continued. Eight disabled patients were trained in the department in the year. Two were found jobs selling basket-ware and another was found employment in a textile factory.

The number of patients given courses of treatment in the department in 1965 were as follows:

			New Cases	Re- Attendances
General Hospital	..	..	982	25,144
St. Andrew's Orthopaedic Hospital	..	..	87	3,276
Spastic Children's Centre	..	..	6	1,870
Kandang Kerbau Hospital	..	..	32	88
Thomson Road General Hospital	..	..	468	10,203
Tan Tock Seng Hospital	..	..	469	16,933
Woodbridge Hospital (Female)	..	..	463	32,079
Woodbridge Hospital (Male)	..	..	216	30,121
Trafalgar Home	..	..	74	29,241
Chronic Sick Hospital	..	..	25	7,840

ALMONERS' DEPARTMENT

The Senior Almoner was Miss D. K. Vaithilingam who went on a year's leave from 12th July, 1965. Mrs. Y. F. Chen assumed headship of the department in her absence.

This was one service where the establishment was still far from filled. Of a total establishment of 32, only 22 were filled.

Activities of Special Interest

Cardiac Surgery: In the scheme for sending a few patients to Perth for Open Heart Surgery the Almoners were required to give reports on the social conditions of patients selected for the operations and were responsible for all arrangements for sending the patients to Australia.

Grants for Hearing Aids and Pudenz Valves: The Rotary Club donated 12 sets of Hearing Aids which the Almoners could dispense to needy patients at less than a third of the usual cost.

The Rotary Club also donated \$1,500 for the purchase of six Pudenz Valves for the treatment of hydrocephalic children.

Training

The Department not only is responsible for patients but also for teaching of Student Almoners. Lectures in social services are given for medical students, Public Health Sisters, Nurses and others.

Problem of the Chronic Sick

This is one of the difficult problems faced by the almoners. There has been an increase in the number of chronic sick taken into the hospitals but no increase in the number of beds in the Chronic Sick Hospital, Woodbridge Hospital and Tan Tock Seng Hospital. Accommodation outside the hospitals in the temples at Woodlands and Aljunied Road are unsuitable and patients have been withdrawn from these Homes.

The beds set aside in the hospitals for the Chronic Sick are as follows:

			Male	Female
Chronic Sick Hospital	..	..	51	19
Tan Tock Seng Hospital	..	..	36	—
Mandalay Road Hospital	..	..	—	8
			—	—
	Total	..	87	27
			—	—
No. of cases admitted, 1965	..	..	57	11
No. of patients died prior to beds being available			64	22

The Problem of the Mental Defective Children

Like the Chronic Sick, accommodation for the Mental Defectives are far from adequate. The number of beds available for the mentally retarded is 45. Even by limiting admissions to those requiring constant medical care the numbers awaiting accommodation was over 200. Only five were admitted into the Unit in 1965. Some of the others — 25 children were fostered out and the families of the others assisted with allowance to care for them.

Funds distributed

\$19,509 was spent from Public Assistance funds, for patients on Public Assistance. These were used chiefly for payment of fares.

\$12,189 was expended from the Government Welfare Fund to assist families of patients for food or payment of rent when the bread-winner of the family suddenly became ill.

\$33,297 was spent from the Mental Defective Vote for payment to foster parents and to parents of Mental Defective children and \$7,402 was spent from the James Craig Trust Fund for the care, maintenance and support of patients, chiefly those maintained in the temples.

From the Almoner's Samaritan Fund a sum of \$1,992 was spent to assist in the rehabilitation of patients or provide them with various appliances such as hearing aids, orthopædic appliances and others. Rations of flour, biscuits and noodles were made available by Catholic Welfare Services for patients. These were distributed by the Almoners to needy patients.

Chapter Seventeen

THOMSON ROAD GENERAL HOSPITAL

THE YEAR 1965 was memorable for it saw the opening of the new surgical-out-patients block; and the Assistant Nurse Training School.

On 20th February, 1965, Mr. Yong Nyuk Lin, the Minister for Health, officially opened the new extensions providing facilities for Follow-up clinics, Records Office, Dispensary, X-ray Unit, Casualty Department, Surgical Operating Theatres as well as Gynæcology and Obstetric Operating Theatres.

The other important event was the completion of the Assistant Nurses' Training School on 8th July, 1965. This building cost \$300,000. The school has accommodation for about 400 pupils and consists of four large classrooms, two practical rooms, a library, laboratory, kitchen, conference rooms and a common room and four offices.

The new school was officially opened by Mr. Yong Nyuk Lin, the Minister for Health, on 25th September, 1965 and about 500 guests, including students in Secondary IV from 20 schools.

Staff

The Heads of the various sections were as follows:

The Medical Superintendent was Dr. H. F. Jackson, The Consultant Physician, Dr. Seah Cheng Siang, the Surgeon, Mr. Choo Jim Eng, the Neurosurgeon, Mr. Tham Cheok Fai and the Matron was Miss W. de Cruz.

With the increase of Nursing Staff and Medical and Health Servants, it was possible to organise the Surgical Unit. Two wards were opened (having a total of 72 beds) on 11th January, 1965 to receive patients who needed surgical attention and surgical operations were first performed in the new theatre a day later.

Another ward was opened in June to receive post-operative convalescent patients and Casualty cases. The Casualty Department became functional on 1st July, 1965 but has not been fully operational for a 24 hour service. Casualties are accepted between the hours of 8.30 a.m. to 3.00 p.m. on week-days and 8.30 a.m. to noon on Saturdays.

A sub-centre of the Blood Bank was established in the hospital on 27th March, 1965.

MEDICAL UNIT

The year was characterised by an increasing load of work performed by the Unit.

Inpatients

With 180 beds (72 for females and 108 for males) there were 3,320 new admissions with 1,889 re-admissions making a total of 4,989. This was an increase over last year.

TABLE 89

			New Admissions	Re- Admissions	Total
1962	..	..	1,037	339	1,376
1963	..	..	2,594	760	3,354
1964	..	..	3,099	1,149	4,248
1965	..	..	3,320	1,669	4,989

Until the hospital establishes its own Admission-Emergency Unit, the patients for admission were largely from the Emergency Unit, Outram General Hospital. Patients are also received from nearby Out-patient dispensaries, from private practitioners and from the Unit's own clinics.

Outpatients Clinics

This also showed an increase of attendances for 1965. Table 90 shows comparable figures for the last four years.

TABLE 90

			New Cases	Re- Attendances	Total
1962	..	..	2,357	6,517	8,874
1963	..	..	1,329	12,423	13,752
1964	..	..	1,062	17,788	18,850
1965	..	..	1,468	23,194	24,662

These clinics are held daily from 9.00 a.m. to 4.00 p.m. for the reception of new referrals and the management of disorders requiring continued medical surveillance.

Staff

The Physician was Dr. Seah Cheng Siang and the staff of medical officers consisted of two Senior Registrars, six Medical Officers and five Housemen.

Under-Graduate Teaching

The Unit was responsible for the teaching of elementary clinics to two batches of Medical Students each of about 30 students.

Post-Graduate Teaching

Lunch hour case-conferences were conducted every Wednesday. Neurological conferences were held on Friday evenings with participation by Consultants from other hospitals.

Special Studies

In progress are the following projects:

1. A study into the so called disease "tropical nutritional anæmia" under the supervision of Dr. F. J. Jayaratnam.
2. The use of alkylating agents in the management of Auto-immune diseases.
3. Investigation and treatment of Chronic destructive and neoplastic disease of the liver.

Publications

1. Seah Cheng Siang, M.D., M.R.C.P. (E.), Quan Siew Khin, M.B.B.S., and Lee Kum Tat, B.Sc., Ph.D., M.R.I.C., F.R.I.C., (1965) "Primary Hepatocellular Carcinoma". *Far East Medical Journal*, 1, 143.
2. Seah Cheng Siang, M.D., M.R.C.P., (E.), and Tay Chong Hai, M.R.C.P.(G), (1965) "Decompensated Crytogenic and Alcoholic Cirrhosis in Singapore Clinical study of 100 patients," *Singapore Medical Journal*, 6, 207.
3. Seah Cheng Siang, M.D., M.R.C.P. (E.), Andrew Chew, M.R.C.P., Wong Kum Hoong, M.R.A.C.P., and F. J. Jayaratnam, M.R.A.C.P. (1965) "Use of Cyclophosphamide in the Treatment of Systemic Lupus Erythematosus." *British Medical Journal* 2, (to be published).

SURGICAL UNIT

The Surgical Unit started receiving patients on 11th January, 1965 and General Surgical operations were first performed on 12th January, 1965. Operations included chest and neurosurgical operations. Since May, elective and some of the emergency neurosurgical operations have been carried out in the operation theatres attached to the Unit. The operations performed were as follows:

Total operations	..	..	..	3,805
Major operations	..	..	..	1,884
Minor operations	..	..	..	1,921
Emergency Major operations	..	..	..	78
Chest operations	..	..	..	20
Neurosurgical operations	..	..	..	85

On 1st July, 1965 the Casualty Department started functioning part-time, confining itself to serving the northern region of the island. In six months, this Department dealt with the following:

New Casualty Cases	..	..	749
Repeat Casualty Cases	..	..	393
New Surgical Cases	..	..	84
Repeat Surgical Cases	..	..	608
Total Operative Procedures in Minor Theatre (for the whole year)	..	..	796

Patients seen in the Unit came from the regional Outpatient Dispensaries, Police Training School, Naval Base, and were also referred from the Medical Unit, Thomson Road General Hospital, Tan Tock Seng Hospital, Kandang Kerbau Maternity Hospital, Middleton Hospital. A total of 6,943 patients were seen in the Outpatients and Follow-up Clinic, comprising 3,083 new and 3,860 repeat cases.

Staff

The Surgeon was Mr. Choo Jim Eng and a staff consisting of a Registrar and two Medical Officers and three Housemen. Mr. Tham Cheok Fai, the Neurosurgeon was posted to the Unit on 22nd March, 1965. The shortage of Nursing and Attendant staff has prevented the Unit from functioning fully on a 24-hour daily basis for attending to emergencies.

Almoners' Department

The number of interviews that were recorded totalled 1,712 for the year.

The total number of cases registered was as follows:

		Number of Medical Cases		Number of Surgical Cases	Total
		New	Old		
1964	..	570	164	Nil	734
1965	..	517	190	102	809

The Government Welfare Vote was increased from \$1,800 in 1964 to \$3,000 in 1965. Of this a total of \$2,810.65 was paid out to patients and their families.

A sub-imprest of \$120 pm. was given by the Public Assistance Section for payment of fares to patients who were in receipt of Public Assistance allowances to enable them to attend for regular treatment. A total of \$1,910 was spent on a total of 1,044 payments.

On application by the Almoner, the Catholic Welfare Services supplied rations this year for distribution to some of our patients. Rations were given to 42 cases comprising a total of 184 persons.

A total of 1,512 lbs. of skimmed milk, received from the Social Welfare Department was distributed to 30 cases during the year. This figure is lower than that of 1964 because, due to shortage of supply, no powdered milk was available for distribution for the first three months of the year.

The lending Library continued to be run by a voluntary worker who comes once weekly. The Seletar Wives Group continued their monthly visits distributing biscuits, sweet and cigarettes until December when they expressed the feeling that their efforts were not being appreciated. This was partly due to the fact that with a faster turnover of patients they kept on seeing new patients who did not know them.

Physiotherapy Department

The number of cases treated in this department are as follows :

			1964	1965
New Cases	...	...	757	737
Repetitions	...	...	7,134	11,644

From the above it will be noticed that the number of new cases remained much the same but the repetitions showed a marked increase. This was due to the fact that all surgical cases were entered under the heading of repetitions.

Occupational Therapy Department

Since a Neurosurgeon was based in the hospital there has been quite a few pre and post operative neurosurgical cases referred for occupational therapy.

Attendances

Nationality	NEW CASES		Chil- dren	Total	Nationality	REPETITIONS		Chil- dren	Total
	Male	Fe- male				Male	Fe- male		
Chinese ..	107	151	70	328	Chinese ..	2,104	4,522	1,544	8,170
Indians ..	31	17	13	61	Indians ..	538	359	120	1,017
Malays ..	19	16	12	47	Malays ..	243	259	213	715
Eurasians ..	5	2	..	7	Eurasians ..	12	44	..	56
Total ..	162	186	95	443	Total ..	2,897	5,184	1,877	9,958

Clinical Laboratory

The Clinical Laboratory comprises of a Hæmatological Section, a Bio-chemical Section and a Miscellaneous Section. During the year the volume of work had increased tremendously and in all 80,728 specimens were examined. This total exceeded that of 1964 by 59 per cent and the increase was due to the opening of the Surgical Unit and the increase of outpatient attendances.

A brief summary of the examinations carried out is as follows :

Blood Haematological..	..	..	37,858
Bio-chemical	..	..	10,591
Urine ..	..	..	25,505
Sputum ..	..	..	2,353
Blood Films	...	..	1,064
Stools ..	..	..	2,531
Swabs, Smears, Body Fluids, etc.	..	..	826

Chapter Eighteen

KANDANG KERBAU HOSPITAL

AS THE only Government Hospital dealing with maternity and gynæcological patients in Singapore, the Kandang Kerbau Hospital had an annually increasing number of admissions since 1946 when its special function as a hospital for women was resumed. While the trend of gynæcological and obstetric admissions continue to increase, the total deliveries for 1965 have for the first time since 1946, come lower than the year before:

			Gynaecological Patients	Deliveries
1963	..	..	6,154	39,436
1964	..	..	6,768	39,598
1965	..	..	8,591	38,849

This small reduction in the number of births in the Hospital may be due both to the encouragement of patients to make use of the free Domiciliary Delivery Service and the charge of a \$10 fee for Class C hospital confinements, and to the work of the Family Planning Organisations. The formation of a Family Planning and Population Board in 1966 by Government is timely; one facet of the Board's work will have the effect of reducing further the load on this Hospital which was not built or designed to deal with the large number of patients it now has.

The opening of a branch Blood Transfusion Service in the Hospital has been another high-light of the year. Although stocks of blood are still sent from the main centre at the General Hospital, the branch laboratory in the Hospital speeds up the availability of blood to patients requiring urgent transfusions.

Clinical Administration

The total bed strength remained unchanged: there are 443 beds, of which 314 were for obstetrics and 129 gynæcological cases. There are now 100 cots in the premature and ward nurseries. Obstetric and gynæcological patients continue to be looked after by the two Government Units "A" and "B" and by the University "T" Unit.

The Pædiatric Unit

The Pædiatric Staff consists of the Professor of Pædiatrics, an Assistant Lecturer and a Medical Officer.

Between them, they attend to all the neonates both in the two premature nurseries and in all the lying-in wards, and referrals from the Post-natal Clinic every morning; in addition two follow-up Pædiatric Clinics are held each week.

Dr. W. R. Brown, a Research Associate from the Hooper Foundation, in conjunction with the Professor of Pædiatrics, completed his work on Kernicterus in Singapore. Arising from this valuable work, all the newborns in this Hospital are now screened for erythrocytic Glucose-6-Phosphate Dehydrogenase deficiency. Those affected are kept for observation for a period of one to two weeks; cases of hyperbilirubinæmia were given prophylactic exchange transfusions without which many would have died, or if they lived would have been mentally deficient.

This work by the Pædiatric Unit has been accorded world recognition.

Hospital Staff

In 1965, the Acting Medical Superintendent was transferred to the General Hospital to take up duty as a Consultant Physician, and the post of Medical Superintendent, Grade *E*, was substantively filled by Dr. S. M. Goon. Mr. T. H. Lean was appointed Senior Obstetrician and Gynæcologist, Grade *E*, and Dr. T. A. Sinnathuray was appointed Acting Obstetrician and Gynæcologist, Grade *G*.

In January 1965, two senior members of the Hospital staff, Mr. T. H. Lean and Dr. S. H. Tow, were elected to the Fellowship of the Royal College of Obstetricians and Gynæcologists; this was a signal honour for the Hospital. Dr. Tow has since been appointed to the Chair in Obstetrics and Gynæcology, University of Singapore.

In addition, there are two Senior Registrars and an average of 16 Medical Officers and 14 House-officers. In addition, the "T" Unit has a Professor, one Senior Lecturer, three Lecturers, and two "trainees" or Assistant Lecturers.

A Medical Officer, Dr. Ong Theng Kwee returned from the United States in November after a year's training in Gynæcological Pathology and Cytology.

In-Patients

(a) The total number of admissions in 1965 was 52,194 compared with 50,876 for 1964. Of these 43,603 were maternity and 8,591 were gynæcological.

(b) The average number of patients per day was 510 compared with 444 for 1964.

Maternity

(a) The total number of deliveries in 1965 was 38,849 compared with 39,598 in 1964.

(b) The number of maternal deaths was 23 or 0.6 per thousand; the corresponding figure for 1964 was 24 or 0.6 per thousand.

(c) 1,240 Cæsarean Sections were performed.

Gynæcological

(a) There was a marked increase in the number of gynæcological admissions in 1965, the total being 8,591 compared with 6,768 in 1964 and 6,154 in 1963.

- (b) The number of deaths was 53 as against 40 for 1964 and 45 for 1963.
- (c) 10,886 operations were performed, 2,280 being major and 8,606 minor.

Although the actual number of births in the Hospital had been reduced by almost two per cent, the total numbers of admissions, out-patient attendances and out-patient referrals and operations continue to increase without any corresponding increase in staff or accommodation. The increase of the average daily number of patients from 444 in 1964 to 510 in 1965 in a hospital with 443 beds tells its own story. Such a situation cannot be long tolerated without serious repercussions on morale and standards. The employment of more staff and the early dispersal of some of the patients to another unit are urgent measures to be seriously considered (see Tables 91 and 92 for births in Singapore and at Kandang Kerbau Hospital).

Out-patients

ANTE-NATAL AND GYNÆCOLOGICAL OUT-PATIENTS' DEPARTMENTS

- (a) 127,389 patients attended these clinics in the year 1965; of these 83,417 were ante-natal and 43,972 were gynæcological.
- (b) Of these 127,389, 34,139 were new cases and 93,250 were revisits. The corresponding figures for 1964 were 35,592 and 89,332 respectively.
- (c) Special clinics such as abnormal ante-natal, infertility, gynæcological referrals and carcinoma follow-up are held both in the mornings and afternoons during the week days. A high percentage of all out-patients were referred to Consultants and Senior Registrars, e.g. 19,634 gynæcological and 21,970 obstetric out-patients (41,604 patients or 33.3 per cent) are so referred.

Post-natal Clinic

15,514 mothers and 11,987 babies attended this clinic compared with 21,285 mothers and 18,329 babies in 1964.

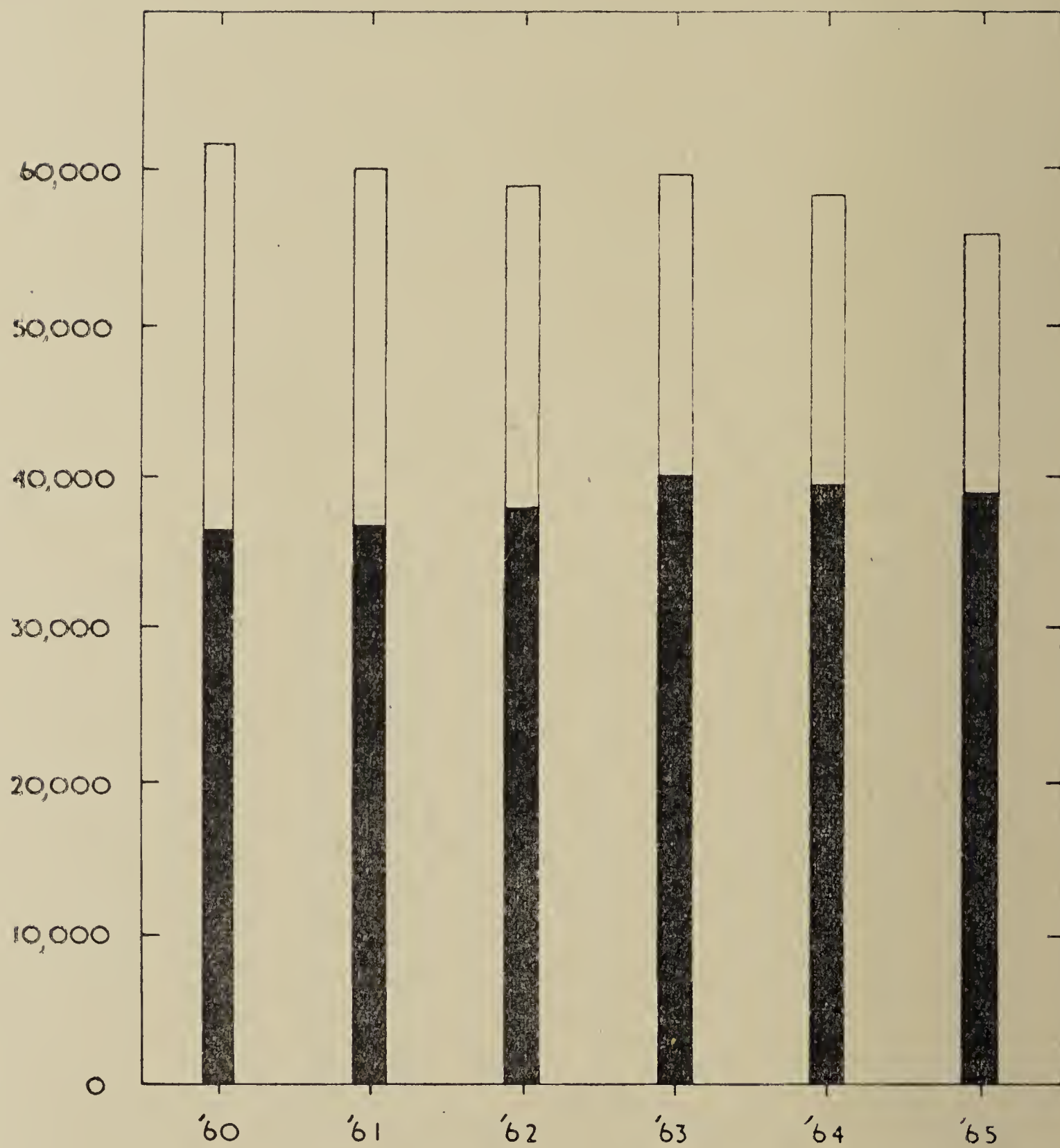
The Domiciliary Delivery Service

The Domiciliary Delivery Service completed its 10th year of service. The work has been steady except that the number of deliveries has decreased and much time is spent in persuading patients who prefer to be delivered in hospital.

TABLE 91

	1960	1961	1962	1963	1964	1965
Total Births Singapore	61,775	59,930	58,977	59,530	58,217	55,736
Births in K.K. Hospital	36,267	36,590	37,861	40,009	39,598	38,849
Percentage of births in K.K. Hospital to total births	59%	61%	64%	67%	68%	69.7%

TABLE 92

**BIRTHS-IN SINGAPORE & KANDANG KERBAU HOSPITAL**

TOTAL BIRTHS

BIRTHS IN K.K. HOSPITAL

The Service is supervised by one Sister assisted by three Staff Nurse Midwives and 29 Trained Staff Midwives.

Due to the decrease in deliveries, the Medical Students who are rostered in turn during their training received one case each. The Trained Nurses and Pupil Midwives who spent six weeks during their training each received 5-10 cases. A total of 107 Medical Students, 65 Trained Nurses and 55 Pupil Midwives were trained this year.

Out of 3,490 women interviewed in the Ante-natal Clinic, only 1,710 cases were finally booked for home delivery. A total of 1,137 cases in labour were attended of which 185 cases were transferred to hospital due to foetal or maternal reasons and 952 cases were delivered at home. (Domiciliary deliveries in 1954 were 1,414).

During the lying-in period 534 cases were referred to Doctors for complaints of mothers and babies and treatment was carried out at home. 128 cases were referred to Doctors and finally admitted to hospital for treatment.

10,808 puerperal visits were paid to patients in their homes including ante-natal and home assessments visits.

On few occasions taxis were used to attend deliveries when hospital transport was not available.

The Domiciliary After Care Service

The Domiciliary After Care Service has continued to give valuable service to the mothers and babies discharged from Kandang Kerbau Hospital.

9,411 cases were given care and advice by the Staff Midwives in this service. 66,447 visits were paid to the mothers and babies during the lying-in period. 897 cases were referred to Doctors for complaints of mothers and babies and treatment was carried out at home. 128 cases were referred to Doctors and finally admitted to hospital for treatment.

Almoners' Department

The composition remained the same as in 1964 except for a change in personnel — Miss Ong, a newly appointed Almoner replaced Mrs. Poh who was granted two years no pay leave to accompany her husband to Canada.

In 1965 the Department was just as busy as in 1964 although the "Abortion Study" ended on 31st December, 1964. From the study it was learnt that patients requesting abortion and those who were admitted to Hospital suspected of criminal abortion were in great need for guidance and advice on how to help themselves. Thus it was decided that the Almoners should continue to see such cases in 1965 as it was felt that through casework therapy such patients can be assisted to see their problems in their true perspective and be in a position to overcome their problems.

From the figures given below it is clear that there is an increase of Gynæcological and Maternity cases requiring the Almoner's assistance of one kind or another. The outstanding decrease in Abortion Cases referred to us in the year cannot be interpreted as a fall in the number of cases known to the Hospital because some cases were not referred to the Almoners.

	1965	1964	1963
	2 Almoners	2 Almoners	3 Almoners
No. of New Cases referred ..	1,960	1,812	1,670
No. of Old Cases current in the year	832	428	328
No. of Abortion Cases seen	79	684	—
Total caseload for the Department	2,871	2,924	1,998
Average caseload per Almoner	1,435	1,462	666

The increasing and varied work of this Department, including its valuable contribution in the follow-up of cancer and mole patients, can hardly be dealt with by two Almoners. Many of the problems had to be left untackled or dealt with very superficially. It is hoped that a third Almoner will be sent to this Hospital as soon as possible, in order that the Department can meet the needs of the increasing number of patients and at the same time maintain a reasonable if not higher standard of case work and follow-up of the cases.

Physiotherapy Unit

During the year, 1,782 new patients were treated, and the number of repeat cases was 4,000. There was one Physiotherapist working two and a half days a week.

The approved appointment of a full-time Physiotherapist for 1966 is very welcome and necessary for not only can daily treatments (for those needing it) now be possible, but the other cases especially major post-operative ones can be more thoroughly treated.

The new department which has been in use since the beginning of the year has proved a boon, as now there is ample room for treatments. Also there is a lot of privacy, and protection from electrical shocks for those patients receiving electrical treatments.

September 1965 saw the commencement of Ante-natal Classes using a relatively new system of preparation for childbirth. This was made possible with the valuable and vountary help of a visiting Physiotherapist specialised in this technique, called Psychoprophylaxis. With a pilot scheme of three mothers, all primigravidas, all three delivered normally and (according to the patients) had rather shorter labours than expected. Since then, many more trained in this way have delivered, and on the whole there has been a considerable measure of success. It is hoped that Psychoprophylaxis will soon be taught on a large scale, so that every woman having her first baby can be trained if she wishes it.

Clinical Laboratory

The six Laboratory Technicians attached to this Hospital carried out 113,969 examinations as against 111,308 for 1964 and 104,111 for 1963.

Blood Transfusion Laboratory

This important Laboratory was opened on 4th October, 1965 with the secondment of four technicians. From its inception to the end of the year, it had dealt with 4,518 specimens of blood and given patients 1,182 pints of blood transfusions.

Ambulance Service

There were 1,086 calls for the Ambulance Service in 1965. The six ambulances covered only 7,162 miles. In 1964, there were 2,024 calls and the milage was 17,805.

Cytological Service

Two officers each fully trained in Cytology and Gynæcological Pathology, are the only staff of this Service. In the absence of Government cyto-technicians, the University Laboratory staff have been generously assisting the Hospital by staining the necessary slides. There is only one microscope between the two officers. It is hoped that staff and equipment will be available in 1966 in order that this valuable Service can be expanded.

In 1965, 346 requests and 464 smears were dealt with by this Service.

Committees

In addition to the Post-graduate, Cancer, Surgical Supplies and Drug Advisory Committees, a new Co-ordination Committee was formed in 1965 consisting of senior members of the Medical and Nursing Staff, and the staff of the Midwifery School. This Committee co-ordinates the ideals of the school with the practical aspects of nursing as practised in this Hospital. To this Committee also falls the task of selecting suitable candidates for post-graduate midwifery training.

Research

A large amount of clinical research has been embarked upon in this Hospital, particularly since 1964. Projects are submitted to the Post-graduate Committee for study and approval, and on completion, the resultant papers are published, usually in the "*Bulletin*", the journal published twice yearly by the K. K. Hospital Post-Graduate Committee.

A major research project on Human Genetics on 40,000 consecutive births in this Hospital, undertaken by the World Health Organisation was completed in late 1964, and the results published in early 1965. As a follow-up of this work, it is likely that a team of research workers will be sent to the Hospital in 1966.

Chapter Nineteen

MIDDLETON HOSPITAL (INFECTIOUS DISEASES)

The Middleton Hospital is the hospital for the treatment of infectious diseases. It has accommodation for 250 patients. It is one of the oldest of the hospitals in use having been built in 1913. For most of its existence it was under the administration of the former City Council Health Department. In 1960 it was brought into the fold of the Government Medical Services.

The Medical Superintendent was Dr. Leong Kwok Wah. He was assisted by two Medical Officers, one of whom was a part-time officer.

During the year, there were 3,904 admissions with 31 deaths, a mortality rate of 0.8 per cent. Admissions were higher than the previous year due to outbreak of Typhoid Fever which occurred in Chung Cheng Chinese High School during the months of March to May, 1965.

A list of the more important infectious diseases seen in the hospital in the last ten years is given in the following Table.

TABLE 93

ADMISSIONS OF THE MORE IMPORTANT INFECTIOUS DISEASES DURING THE LAST 10 YEARS

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Amœbic										
Dysentery ..	126	197	156	112	249	261	285	257	328	328
Bacillary										
Dysentery ..	26	74	60	36	70	96	118	152	144	88
Chicken-pox ..	1,488	1,039	472	987	1,453	975	1,249	1,221	701	1,385
Clinical										
Dysentery ..	63	150	92	68	161	224	219	235	215	106
Cerebro-spinal										
Meningitis ..	..	..	4	..	..	..	1	..	..	..
Cholera, El Tor	..	..	..	..	..	..	..	27	23	..
Diphtheria ..	552	712	547	519	642	587	353	394	204	226
Erysipelas ..	2	3	1	..	3	..	3	..	1	..
Measles ..	301	153	357	146	178	318	403	315	283	184
Mumps ..	52	14	43	47	55	47	42	50	29	22
Pneumonia ..	..	..	1	4	3	1	..	1	1	6
Plague ..	..	..	..	..	..	..	..	..	..	..
Poliomyelitis, ac.	37	52	405	66	201	48	12	66	12	40
Rubella ..	86	36	7	9	16	5	14	14	21	4
Scarlet Fever ..	..	1	..	..	..	..	..	..	..	..
Small-pox ..	..	..	..	10	..	..	..	..	..	..
Tropical Typhus	1	..	1	..	..	..	..	1	1	2
Typhoid Fever ..	76	118	127	160	174	155	103	169	120	271
Whooping Cough	85	30	38	15	39	23	37	9	14	6
Other Diseases/ Carriers ..	936	1,083	1,368	1,272	1,680	1,187	2,097	1,997	1,433	1,236
Total ..	3,831	3,662	3,679	3,451	4,924	3,927	4,936	4,908	3,530	3,904

TABLE 94

NUMBER OF ADMISSIONS, DAYS IN HOSPITAL AND DEATHS
BY ETHNIC GROUPS

Ethnic Group		Re- main- ing No. of Patients (1964)	No. of Days in Hospital	Admit- ted No. of Patients (1965)	No. of Days in Hospital (1965)	Total No. of Patients	Total No. of Days in Hospital	Deaths
Europeans	..	..	..	4	56	4	56	..
Eurasians	..	1	12	46	352	47	364	1
Chinese	..	103	4,484	2,021	31,909	2,124	36,393	20
Indians/Pakistanis	..	47	443	1,224	12,138	1,271	12,581	7
Malays	..	28	546	558	6,223	586	6,769	3
Javanese	..	1	5	29	273	30	278	..
Others	..	2	40	22	359	24	399	..
Total	..	182	5,530	3,904	51,310	4,086	56,840	31

TABLE 95

ADMISSIONS, TRANSFERS AND DEATHS BY SEX GROUP

Sex		Remaining 1964	Admis- sions	Transfers	Deaths	Remaining 1965	Deaths %
Male	..	86	2,572	30	22	78	0.82 %
Female	..	96	1,332	25	9	58	0.63 %
Total	..	182	3,904	55	31	136	0.75 %

Average daily number of patients = 161

Number of Hospital beds = 250

TABLE 96

ADMISSIONS, DISCHARGES, TRANSFERS AND DEATHS BY DISEASES, 1965

Diseases	Remaining on 31-12-64	Admission	Discharge	Transfer to Other Hospital	Deaths	Remaining on 31-12-65
Amœbic Dysentery ..	16	328	308	..	8	28
Amœbic Dysentery Hypertension ..	..	1	..	..	1	..
Amœbic Dys. Peritonitis ..	..	1	..	..	1	..
Bacillary Dysentery ..	6	88	86	..	1	7
Chicken-pox ..	44	1,385	1,416	3	..	10
Chicken-pox with Bro/Pneumonia ..	..	1	..	..	1	..
Chicken-pox with Nephritis ..	..	2	..	2	..	..
Clinical Dysentery ..	6	106	109	..	..	3
Clinical Dysentery with Ac. Abdomen ..	..	1	..	1	..	..
Diphtheria ..	23	226	223	..	4	22
Diphtheria, Cultural ..	..	27*	25	..	..	2
Encephalitis ..	1	2	1	1	..	1
Encephalomyelitis ..	..	1	..	..	..	1
Herpes Zoster ..	..	6	6	..	..	..
Infective Hepatitis ..	..	10	7	3	..	..
Influenza ..	..	114	109	5	..	..
Laryngo-tracheo-bronchitis ..	..	16	16	..	..	..
Measles ..	5	120	121	2	..	2
Measles with Broncho- pneumonia ..	..	58	54	1	3	..
Measles with Encephalitis ..	..	4	2	..	2	..
Measles with Gastro-enteritis ..	..	1	..	..	1	..
Measles with Infective Hepatitis ..	..	1	..	1	..	..
Mumps ..	..	19	19	..	..	..
Mumps with Encephalitis ..	..	3	2	..	..	1
Malaria S. T. ..	..	8	8	..	..	..
Paratyphoid B ..	..	2	2	..	..	..
Poliomyelitis, Ac. (Paralytic) ..	8	39	34	..	..	13
Poliomyelitis, Ac. (Non- paralytic) ..	..	1	1	..	..	..
Post Poliomyelitis ..	12	30	30	..	..	12
Rubella ..	..	4	4	..	..	..
Typhoid fever ..	8	271	262	5	2	10
Typhoid fever (relapse) ..	..	4	4	..	..	..
Typhus, mite (scrub) ..	..	2	2	..	..	..
Tuberculous Meningitis ..	..	1	1	..	..	..
Tuberculosis, Pulmonary ..	..	1	..	1	..	..
Whooping Cough ..	..	6	4	1	..	1
Other diseases/carriers ..	53	1,014	1,008	29	7	23
Total ..	182	3,904	3,864	55	31	136

* One case with toxoplasmosis.

Dangerous Infectious Diseases

There were no cases of smallpox, plague, cholera or other dangerous infectious diseases during the year.

Diphtheria

226 cases were admitted during the year with four deaths. Tracheotomy operation for respiratory obstruction was required in 14 cases. The four deaths occurred in patients who were brought in at a late stage of the disease and they died despite tracheotomy.

The mortality rate of 1.77 per cent was the lowest recorded.

TABLE 97

DIPHTHERIA

ADMISSIONS AND DEATHS FOR THE PAST 10 YEARS

Year	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Admissions ..	552	712	548	519	642	587	353	394	204	226
Deaths ..	47	58	34	23	32	27	13	19	15	4
Mortality Rate..	8.51%	8.14%	6.2%	4.43%	4.98%	4.6%	3.68%	4.56%	7.35%	1.77%

TABLE 98

DIPHTHERIA

ADMISSIONS, DEATHS BY MONTH, 1965

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	25	17	18	14	15	22	21	12	21	23	20	18	226
Deaths ..	..	..	..	..	..	1	..	..	2	..	1	..	4

TABLE 99

DISTRIBUTION OF DIPHTHERIA BY MONTH AND LOCALITY, 1965

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	19	14	14	11	11	20	17	11	16	17	16	13	179
Rural ..	6	3	4	3	4	2	4	1	5	6	4	5	47
Total ..	25	17	18	14	15	22	21	12	21	23	20	18	226

TABLE 100
DIPHTHERIA
ADMISSIONS AND DEATHS BY AGE AND SEX GROUP, 1965

Age Group			ADMISSIONS		Total Admissions	DEATHS		Total Deaths
			M.	F.		M.	F.	
Under 1 year	..	..	12	15	27	..	..	..
1 year	..	..	10	13	23	..	..	..
2 years	..	..	14	15	29	..	1	1
3 years	..	..	15	18	33	1	2	3
4 years	..	..	12	11	23	..	..	..
5 — 9 years	..	..	17	24	41	..	..	..
10 — 14 years	..	..	16	15	31	..	..	..
15 — 19 years	..	..	2	10	12	..	..	..
20 + years	..	..	4	3	7	..	..	..
Total	..		102	124	226	1	3	4

TABLE 101
DIPHTHERIA
ADMISSIONS AND DEATHS BY ETHNIC GROUP, 1965

Ethnic Group			ADMISSIONS		Total Admissions	DEATHS		Total Deaths
			M.	F.		M.	F.	
Europeans	..	..	..	..	..	..	..	..
Eurasians	..	..	..	..	..	..	..	..
Chinese	..	..	79	108	187	2	1	3
Indians	..	..	9	5	14	1	..	1
Malay/Javanese	..	..	14	10	24	..	..	..
Others	..	..	..	1	1	..	..	..
Total	..		102	124	226	3	1	4

TABLE 102
DIPHTHERIA
CLINICAL TYPES OF CASES, 1965

Type						Admissions	Deaths
Laryngeal	..	..	..	..	..	23	4
Pharyngeal	..	..	..	..	..	45	..
Faucial	..	..	..	..	..	85	..
Nasal	..	..	..	..	..	40	..
Aural	..	..	..	..	..	30	..
Cutaneous	..	..	..	..	..	3	..
Oral	..	..	..	..	..	..	..
Total ..						226	4

TABLE 103
DIPHTHERIA—TRACHEOTOMY OPERATIONS, 1965

Number of Tracheotomies done	..	..	..	14
Percentage of cases requiring tracheotomies	..	..	..	6.19%
Number of Deaths after Tracheotomy	..	..	..	4
Case fatality after Tracheotomy	..	..	..	28.57%

Diphtheria Carriers

A total of 27 carriers discovered among diphtheria contacts were admitted for isolation and treatment.

Acute Anterior Poliomyelitis

The number of admissions showed a moderate rise compared with 1964. 40 cases of Poliomyelitis were admitted during the year, of which 39 cases were paralytic and one case non-paralytic. There was no death.

30 cases of Post Polio were also admitted for rehabilitation and treatment. These included old cases of poliomyelitis and recent cases discharged prematurely during the Chung Cheng High School typhoid epidemic.

TABLE 104
POLIOMYELITIS
ADMISSIONS AND DEATHS DURING THE LAST 10 YEARS

Year		1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Admissions	..	29	52	404	66	201	48	12	66	12	40
Deaths	..	..	..	12	3	6	5	1	1	..	..

TABLE 105

POLIOMYELITIS
ADMISSIONS AND DEATHS BY MONTH, 1965

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	4	..	1	6	..	7	10	4	4	1	..	3	40
Deaths ..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 106

POLIOMYELITIS
REGIONAL DISTRIBUTION BY MONTH, 1965

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Urban ..	2	..	..	3	..	6	7	1	1	..	..	3	23
Rural ..	2	..	1	3	..	1	3	3	3	1	..	..	17

TABLE 107

POLIOMYELITIS
AGE, SEX AND ETHIC GROUP, 1965

Age Group	Europeans		Eurasians		Chinese		Indians		Malays		Total	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year	1	2	1	..	1	..	3	2
1 year	2	5	1	..	1	..	4	5
2 years..	9	3	..	1	1	..	10	4
3 years..	4	2	..	..	1	..	5	2
4 years..	2	..	..	..	..	..	2	..
5—9 years	2	..	..	..	..	..	2	..
10—14 years
15—19 years	1	..	..	..	..	..	1	..
20—29 years
30+ years
Total	21	12	2	1	4	..	27	13

Typhoid Fever

The outstanding feature of the year was an explosive outbreak of typhoid fever among the students of the Chung Cheng High School at Goodman Road. The outbreak started in March and tailed off in May. A total of 98 confirmed cases were admitted from the School. Many of the cases were in a late stage of the disease with marked toxicity, delirium and intestinal hæmorrhage. There was one death in a patient admitted in a very toxic state with severe hæmorrhage who died the following day despite intensive treatment.

At the same time as the Chung Cheng outbreak, there was a general increase in typhoid cases from various places and schools scattered over wide areas. These included three foci of infection at Duxton Hill, Kampong Eunon and Kallang Airport. In particular, a number of cases kept appearing in the Kampong Eunon area. Besides the Chung Cheng High School cases, 94 cases of typhoid were admitted during the period from March to May.

The source of the Chung Cheng outbreak was attributed to an ice-water hawker known as "Little Pig". He had fallen ill but continued to sell ice-water which he had contaminated with *Salmonella typhi*. Later he became very ill and stopped selling but the school children whom he had infected, subsequently developed typhoid (after an incubation period of about two weeks). When the outbreak occurred, he was not present when the hawkers at the School were rounded up for typhoid carrier examination. He was ultimately traced and admitted to Hospital in a very ill condition with typhoid fever.

During the outbreak, a total of 213 hawkers and their families were admitted for examination of the typhoid carrier state.

Altogether, 271 cases of typhoid fever were admitted during the year with two deaths.

TABLE 108

TYPHOID FEVER

ADMISSIONS AND DEATHS BY ETHNIC GROUP AND SEX, 1965
(Deaths in Bracket)

	Age	0—9		10—19		20—29		30+		Total		Total
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Europeans
Eurasians	1	..	..	..	..	..	1	..	2	2
Chinese	11	19	100(1)	60	15	10	9	5	135 (1)	94	229 (1)
Indians	1	2	3	2	2	..	..	..	6	4	10
Malays	2	..	8	10	5	4 (1)	..	1	15	15	30 (1)
Javanese
Total	14	22	111(1)	72	22	14(1)	9	7	156	115	271 (2)

TABLE 109

TYPHOID FEVER

ADMISSIONS AND DEATHS BY MONTH, 1965

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	7	19	64	95	35	11	8	6	5	6	7	10	271
Deaths ..	..	..	1	..	..	1	..	..	..	..	..	..	2

Typhoid Carrier Examinations

During the year, a total of 365 persons from ice-cream factories and stalls, School tuck-shops and various restaurants were investigated for detection of Typhoid Carriers. No carriers were detected during these routine screenings.

Chicken-pox

1,386 cases were admitted with one death. The fatal case occurred in an adult male Indian with complicating bronchopneumonia.

TABLE 110

CHICKEN-POX

ADMISSIONS BY AGE, SEX AND ETHNIC GROUP, 1965

	Age	0—10		11—19		20+		Total		Total
		M.	F.	M.	F.	M.	F.	M.	F.	
Europeans
Eurasians	10	8	2	12	2	6	14	26	40
Chinese	58	46	44	18	71	24	173	88	261
Indians	118	110	118	64	337	68	573	242	815
Malays	38	26	49	22	87	10	174	58	232
Javanese	4	2	6	..	3	3	13	5	18
Others	4	..	6	4	2	4	12	8	20
Total	232	192	225	120	502	115	959	427	1,386

TABLE 111

CHICKEN-POX

ADMISSIONS AND DEATHS BY MONTH 1965

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Admissions ..	227	307	294	22	46	89	105	75	57	73	49	42	1,386
Deaths ..	..	1	..	..	..	..	..	..	..	..	..	..	1

Dysentery

There were 522 admissions with nine deaths. 328 cases had Amoebic Dysentery, 88 cases had Bacillary Dysentery while in 106 cases no specific organisms were isolated.

TABLE 112

Type of Cases				Admissions	Deaths
Amoebic Dysentery	..	..	..	328	8
Bacillary Dysentery	(a) Sonne	..	..	58	1
	(b) Flexner	..	..	30	—
Clinical Dysentery	..	..	..	106	—
Total				522	9

Amoebic Dysentery

There has been a gradual increase in the number of Amoebic Dysentery cases admitted since 1960. Amoebiasis is now one of the major infectious diseases treated in the Hospital. There was a notable increase in admissions during the year. A good number were ill with complications such as hepatitis, liver abscess, pleural effusion and lung abscess. As a result there was an increase in the case fatality rate.

Many of the cases in addition suffer from undernutrition, malnutrition (mainly protein deficiency), anæmia, infestations with worms and other parasites. Some cases had bacillary dysentery and Salmonella enteritis together with amoebic dysentery.

Amoebic Dysentery Carriers

14 cases of Amoebic Dysentery Carriers were admitted during the year, of which 13 cases were from the Girls' Homecraft Centre at Yorkhill. One case was referred from the Naval Base. She was discovered during routine medical examination of domestic servants.

Chapter Twenty

SOCIAL HYGIENE

SOCIAL Hygiene Branch is responsible for the treatment and control of Venereal Diseases and the treatment also of skin diseases. The facilities provided are:

- (i) Middle Road Hospital.—A 61-bedded hospital with male and female outpatient clinic, sited in the centre of the city;
- (ii) Tanjong Pagar Clinic.—A seamen's clinic in the dock area, serving both merchant seamen and the local populace;
- (iii) Two mobile units: A male and female travelling dispensary serves the rural areas;
- (iv) An Epidemiological Control Unit for case finding and case holding;
- (v) A Central Serological Laboratory at Middle Road Hospital;
- (vi) An Almoner's Department.

Teaching

The teaching of students for the D.P.H. Course; Medical Students; Nurses; Almoners; Midwives; Public Health Inspectors; Social Studies Students and Family Planning Workers is undertaken by this branch.

Staff

The Senior Medical Officer was Dr. Koh Kim Yam. The medical officer staff were of five in number; two of whom were part-time officers.

Due to shortage of Almoners, this service had only a part-time Almoner who attended once a week.

Attendances

Attendances figures have not changed much during the last five years:

Year	In-Patients	Out-Patients	Total Attendances
1961	.. 1,179	32,513 (16,397 females)	202,916
1962	.. 1,285	31,862 (16,854 females)	197,594
1963	.. 967	30,312 (15,558 females)	185,890
1964	.. 1,073	33,594 (18,971 females)	191,812
1965	.. 1,128	32,757 (19,214 females)	197,633

The average daily attendance based on 298 working days was 663.

Venereal Diseases

There was a decrease both in total number of Venereal Diseases and in syphilis cases compared to figures for 1964:

	Year	Syphilitic Infections	Other Venereal Infections	Total
	1961	.. 626	2,609	3,235
	1962	.. 719	3,449	4,168
	1963	.. 574	2,347	2,921
	1964	.. 662	3,248	3,910
	1965	.. 638	2,978	3,616

Types of Syphilitic Infections

		1961	1962	1963	1964	1965
Primary Syphilis	..	166	114	79	92	70
Secondary Syphilis	..	21	13	46	27	27
Early Latent-Syphilis	..	123	212	138	180	185
Late Latent-Syphilis	..	316	330	272	294	288
Tertiary Syphilis	..	49	39	68	47	38
Congenital Syphilis (over 2 years)	..	11	21	17	22	10

The number of early infectious syphilis, i.e. Primary, Secondary and Early Latent Syphilis show the same average figures for the last three years. Four cases of Infantile Syphilis were reported this year.

TERTIARY SYPHILIS

Nationality			Gummata and Skin	Bones and Joints	Cardio-Vascular	G.P.I.	Tabes	Neuro	Others	Total
Male										
Chinese	..	..	1	2	..	2	3	5	..	13
Indian	..	..	..	2	..	..	1	..	1	4
Malaysian	..	..	..	..	1	..	1	1	1	4
Total			.. 1	4	1	2	5	6	2	21
Female										
Chinese	..	..	1	..	1	1	..	4	..	7
Malaysian	..	..	..	..	..	..	..	1	..	1
Total			.. 1	..	1	1	..	5	..	8
Grand Total			.. 2	4	2	3	5	11	2	29

RATIO OF TERTIARY SYPHILIS

		1961	1962	1963	1964	1965
Neuro Syphilis	..	63.3	59.0	38.2	51.1	65.0
Cardio-Vascular	..	22.4	33.4	48.5	36.2	7.0
Cutaneous	..	6.1	5.1	1.5	4.2	7.0
Bones and Joints	..	8.2	2.5	11.8	8.5	21.0

Gonorrhœa and Non-Specific Urethretis

There was a slight decrease in the numbers of Gonorrhœa cases. The numbers of Gonococcal Ophthalmia cases showed an increase compared to 1964. Due to the asymptomatic course of the disease in women, less than 20 per cent of cases came on their own for diagnosis. There were 77 cases of Penicillin Resistant Gonorrhœa.

Year		Gonorrhœa	Gon. Ophthalmia	Gon. Compl.	Gon. and N.S.U.	N.S.U.	Total
1961	..	1,970	107	9	436	1,472	3,993
1962	..	2,402	65	1	487	1,127	4,082
1963	..	1,793	78	2	467	962	3,322
1964	..	2,378	94	23	309	688	3,492
1965	..	2,347	101	3	140	686	3,277

OTHER VENEREAL DISEASES

Year			Lympho-granuloma	Soft Sore	Mixed Infections	Granuloma Inguinals
1961	..	..	16	472	36	—
1962	..	..	25	886	70	—
1963	..	..	12	420	42	—
1964	..	..	20	666	86	—
1965	..	..	6	474	47	—

Social Hygiene Mobile Units

The following table shows the work done:

Clinic		Male	Female	Ante-Natal	V.D. Cases	Invest. Cases	Total
<i>Central</i>							
Yio Chu Kang	..	41	4,243	4,227	9	4,275	4,284
Upper Serangoon	..						
Seletar ..	..					
Paya Lebar	..						
<i>Rural West</i>							
Bukit Timah	..	38	4,523	4,506	15	4,546	4,561
Pasir Panjang	..						
Bukit Panjang	..						
Holland Road	..						
Jurong ..	..					
Ama Keng	..						
<i>Rural East</i>							
Kampong Batak	..	—	4,341	4,332	16	4,325	4,341
Changi ..	..					
Ulu Bedok	..						
Siglap ..	..					
		79	13,107	13,065	40	13,146	13,186

ANTE-NATAL CASES

Nationality	No. of Ante-Natals	Primipara	Primipara Positive	Multipara	Multipara Positive	Positive Ante-Natal
Chinese	7,961	1,487	7	6,474	11	18
Malaysian	958	158	1	800	4	5
Indian	3,821	543	2	3,278	9	11
Eurasian	25	5	—	20	—	—
Others	274	35	—	239	—	—
	<u>13,039</u>	<u>2,228</u>	<u>10</u>	<u>10,811</u>	<u>24</u>	<u>34</u>

34 cases were found to have a positive serology for syphilis out of a total of 13,039 ante-natal cases examined.

Epidemiological Control Unit

This unit is essential for the control of Venereal Diseases particularly syphilis. Its responsibilities are case finding, contacting of defaulters, the follow-up of treated cases for further surveillance and investigation, the contacting of family units, the contacting of promiscuous women and the spreading of health propaganda.

During the course of the year 12,199 home visits were made to defaulters or contacts, and of these 6,607 cases attended, a success rate of 54 per cent.

Postal contacts were not so satisfactory and yielded a poorer response. Of 2,269 cases contacted by post only 779 cases reported.

Family units in which one or other member of the family was infected numbered 5,529 of these 190 were newly registered during the year.

Social Welfare Department Cases

113 girls were referred for examination and treatment, of these 13 cases had gonorrhœa, one had syphilis and one had a combined infection.

Prophylactic Treatment

126 promiscuous women were newly registered this year, 34 had gonorrhœa, 15 had syphilis and three had a mixed infection. There are 2,021 prostitutes on the register.

There were 12 new cases of male prostitutes of whom five had syphilis. 4,321 prophylactic Injections of Pencillin were given during the year.

Skin Clinic

10,475 new skin cases were attended to during the year.

The main group of dermatological complaints dealt with were of infective dermatitis and dermatitis resulting from atopy, allergy, contact or drug. Mycotic infections were also very common, other cases of papulo squamous eruptions, vesicular bullous dermatitis and acute and chronic connective tissue diseases were also seen.

38 cases of Leprosy were referred to the Irrawady Road Skin Clinic.

Almoner's Department

Due to the shortage of Almoners it was still only possible for one Almoner to attend the Middle Road Hospital weekly on Wednesday mornings.

The problems dealt with related mainly to financial and material difficulties, moral support, rehabilitation and employment of other members of the family and education of children.

There were 220 cases on the register of whom 60 were new cases.

SEAMEN

Nationality		Primary	Period not indicated	Gonorrhoea	Lymphogrudoma	Soft Sore	Mixed Infection	Non-Specific Urethritis	Skin Cases	Investigation Cases	Granuloma Inguinares	Total
Chinese	7	..	..	..	4	11	12	..	34
Indian	2	..	..	..	3	28	4	..	37
Malaysian	1	..	1	..	..	..	2
European	139	..	..	..	100	58	455	..	752
Eurasian	1	..	1	..	..	..	..	..	2
Others	3	..	..	..	3	1	5	..	12
Total	152	..	2	..	111	98	476	..	839

The number of seamen attended during the last five years are as follows:

1961	1962	1963	1964	1965
1,062	1,286	1,178	965	839

	IN-PATIENTS			NEW-CASES			RE-REPETITIONS		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Malays and Malaysian	28	92	120	1,079	4,882	5,961	14,092	6,205	20,297
Chinese ..	342	572	914	8,650	12,305	20,955	73,249	31,454	104,703
Indian, Pakistanis and Ceylonese	63	44	107	2,888	1,592	4,480	33,130	3,368	36,498
Others ..	8	12	20	926	435	1,361	2,313	1,065	3,378
Total ..	441	720	1,161	13,543	19,214	32,757	122,784	42,092	164,876

Chapter Twenty-one

TAN TOCK SENG HOSPITAL

TAN TOCK SENG Hospital is for the treatment of pulmonary tuberculosis. As the problem of tuberculosis diminishes, the proportion of chest diseases treated in the hospital has increased. The three hospital wards which were opened in 1963 for adult medical cases continued to function. With the completion of a Thoracic Surgical Unit in the hospital, it now has all the major hospital facilities within its compound. In this way, the hospital is converting from a single speciality hospital to a multiple-purpose and self-contained hospital.

The hospital consists of three sections: an old section consisting of some of the original ward blocks built in 1909; a new section consisting of four modern ward blocks which were completed in 1958, and a section known as the Mandalay Road Unit which is used for women and children suffering from pulmonary tuberculosis. The total accommodation provided by the hospital is 1,319.

Within the compound of the hospital is an Outpatient Department known as the Rotary Clinic as it was built from funds made available by the Rotary Club in 1961.

Staff

The Medical Superintendent was Dr. Andrew Chew Guan Khuan. The Medical Officers consisted of a Senior Physician, three Chest Physicians, three Senior Registrars and an average of twelve Medical Officers. These numbers still fell short of the total establishment of doctors for the hospital, which was about twice more than the numbers working in the hospital. As the character of work changed with a larger number of chest cases and the establishment of a Medical Unit in the hospital, the tempo of work increased and it is a tribute to the staff that they were able to discharge their duties and maintain the services satisfactorily throughout the year.

Four Medical Officers returned to the hospital after successfully obtaining higher medical qualifications.

Yearly X-ray chest examinations are conducted on staff of the hospital to be sure that they are free from tuberculous infection.

Hospital activities

Despite the heavy burden imposed, regular consultation on tuberculous patients continued to be provided to Trafalgar Home, Woodbridge Hospital, Thomson Road General Hospital, Kandang Kerbau Maternity Hospital and General Hospital. Lectures and clinical sessions were conducted for medical students of the University of Singapore attending elementary clinics at Tan

Tock Seng Hospital. Lectures were also given to Student Nurses preparing for the Tuberculosis Nursing Certificate Examination, for Public Health Nursing Examination and for Refresher Course in Cardio-Pulmonary diseases organised by the Academy of Medicine.

Information on statistics has been of vital importance and for this purpose, the medical records system was re-organised during the year.

Research and Special Studies

Special studies on sputum negative cavities, the incidence of positive sputum cultures in minimal pulmonary tuberculosis, the effect of secondary anti-tuberculosis drugs on drug resistant cases, and the blood level of various types of P.A.S. and their effectiveness in treatment, continued through the year. Another special study was the therapeutic trials on the effectiveness of Unithiben on pulmonary tuberculous patients as compared with P.A.S. and I.N.H.

Development

Construction on the Thoracic Surgical Unit which began on the 17th October, 1964 was completed on the 10th October, 1965. Equipment had not yet all been installed so that it would yet be some months before the Unit is operational.

The Unit consists of a new block which has two large theatres and ancillary rooms which include rooms for monitoring equipment and a recovery room. There is a large X-ray section and a laboratory for conducting pulmonary function tests. With this development, all the major hospital facilities will be available within the hospital itself. It will be possible that as pulmonary tuberculosis diminishes, the operations will turn to other chest conditions and eventually the hospital itself may convert into a general hospital with a large section for chest work.

The building of a new Surgical Store was completed by the end of the year. There was no such store in the hospital in the previous year.

Treatment

The increase in the number of drug resistant cases in regard to the Treatment of Pulmonary tuberculosis is still a problem today. Only 25 per cent of these cases are being treated with second line drugs — viomycin, kanamycin, cycloserine, pyrazinamide and ethionamide. These are used in combinations for periods exceeding a year, and being costly; careful screening is necessary before complementing decisions for treating any case. The end result is the mounting expenditure required for the drug votes within the hospital in each succeeding year.

TABLE 113

CRUDE DEATH FROM PULMONARY TUBERCULOSIS

	Year		Total Deaths	Deaths per 100,000
1948	1,491	155
1950	1,193	177
1952	888	82
1954	829	71
1956	784	62
1958	568	37.5
1959	577	36.5
1960	612	37.5
1961	610	36.2
1962	626	36.1
1963	669	36.5
1964	675	35.9
1965	579	29.8

Population: 1.820 million.

Admission to hospital for in-patient treatment continued to be made according to priorities on medical and social grounds. A return of tuberculosis cases admitted to Government Hospitals in the state is shown in Table below:

TABLE 114

TUBERCULOSIS CASES ADMITTED TO GOVERNMENT HOSPITALS

		1957	1958	1959	1960	1961	1962	1963	1964	1965
<i>Tan Tock Seng Hospital</i>										
Pulmonary	..	2,442	3,064	2,588	2,752	2,562	3,089	3,136	2,930	3,391
Bones and Joints	..	133	171	169	115	129	26	95	67	47
Other forms	..	27	41	62	43	54	69	91	71	132
<i>General Hospital</i>										
Pulmonary	..	942	785	660	703	647	600	594	484	
Bones and Joints	..	302	338	332	157	293	197	189	121	
Other forms	..	122	242	252	230	196	115	119	90	
<i>St. Andrew's Orthopaedic Hospital</i>										
Pulmonary	..	—	—	—	19	21	5	2	—	
Bones and Joints	..	235	245	121	115	238	138	32	39	
Other forms	..	—	—	—	—	1	2	—	—	
		4,203	4,886	4,184	4,134	4,141	4,241	4,258	3,802	

TABLE 115

ACUTE MEDICAL CASES ADMITTED TO MEDICAL WARDS AT THIS HOSPITAL

		1963	1964	1965
Admissions	..	900	1,538	1,425

ROTARY TUBERCULOSIS CLINIC

This is the Clinic for the treatment of out-patients, and the following table is an indication of the volume of work done.

TABLE 116

	1959	1960	1961	1962	1963	1964	1965
New cases of tuberculosis*	2,685	2,863	3,613	3,231	3,006	2,665	2,894
Repeat visits of cases of tuberculosis† ..	377,866	342,760	399,211	475,470	347,899	287,769	232,774
Cases for assessment seen by Chest Physicians and Senior Registrars:							
(a) New cases‡ ..	3,946	2,703	3,613	2,597	2,210	2,004	2,277
(b) Repeat cases ..	49,786	47,935	49,173	50,579	39,371	37,120	36,882
No. of patients requiring X-ray Examinations ..	90,697	78,094	85,576	92,419	84,817	83,144	83,749
Laboratory Examinations§	94,551	94,034	109,125	130,407	127,529	165,211	173,673
P.P. Inductions ..	84	48	21	11	10	—	8
P.P. Refills	7,046	6,046	3,646	2,382	1,384	707	78

Explanatory Note:

* New cases of tuberculosis imply all forms seen by Chest Physicians, Senior Registrars and Medical Officers.

The total number of Outpatients seen each year at the Registry Tuberculosis Clinic is the sum total of * and ‡.

† The total number of visits made by a patient in any one day irrespective of whether he comes to see the doctor, to attend for laboratory examination, for an X-ray, for Almoner's investigations, for injections, or for collection of medicines.

§ Urinalysis, haemoglobin estimation, leucocyte and differential counts and stools examinations: this will be considered as 5 laboratory examinations.

MEDICAL CASES SEEN AT THE MEDICAL OUTPATIENTS
AT THIS HOSPITAL

	1963	1964	1965
Cases seen	332	1,835	3,546

The following investigations were carried out during the year by the various units:

1. *Bronchoscopy*.—Bronchoscopies were performed thrice weekly, and a total of 360 were carried out.

2. *Bronchograms*.—256 Bronchograms were done by Medical Officers on specially selected cases.

3. *I.V.P.*.—Intravenous Pychlography was done on 174 cases.

4. *Sinogram*.—112 Sinograms were performed during the year.

Bronchoscopies and minor operations were carried out during the year. The following were major thoracic surgeries done by surgeons at General Hospital:

Thoracoplasty	17
Resections:	
Segmental	7
Lobectomy	42
Pneumonectomy	10
	<hr/> 76 <hr/>

PHYSIOTHERAPY DEPARTMENT

The functions of this Department are similar in pattern with those of the preceding year. The Department continued to treat all pre and post operative chest cases, orthopaedic, medical and surgical patients.

SUMMARY OF WORK

	Year	Treatment	Number of patients treated
1956	22,118	1,688
1957	18,357	1,532
1958	25,032	1,965
1959	28,054	2,407
1960	20,019	2,400
1961	21,786	2,000
1962	18,634	2,160
1963	12,655	654
1964	15,263	768
1965	21,167	801

OCCUPATIONAL THERAPY DEPARTMENT

This department was staffed with two Occupational Therapists and this helped to cope with the increasing demand of occupational therapy. A total of 18,551 were given occupational therapy treatment. Of these 454 were new patients.

In addition, this Department gave training in tailoring, basket and lamp shade making, machine art embroidery and machine knitting to disabled persons under the Rehabilitation Scheme of the Labour Department. Seven such persons undergone training under this scheme during the year under review.

DIVERSIONAL THERAPY UNIT

This Unit still continued its humanitarian work for tuberculous patients.

Annually this Unit has been conducting "Annual Sale" and this year's sale was very successful because of the introduction of variety of new designs. The proceeds from the sale collected amounted to \$3,902.45 as compared with \$3,491.05 in the preceding year.

The Hospital is greatly indebted to the Head of Unit, Mrs. K. I. Tan and to her colleagues, the voluntary helpers and all who had in one way or other contributed to the smooth and efficient running of the unit.

ALMONER'S DEPARTMENT

This department continued its work for the welfare of Tuberculous patients.

Looking over a five year period from 1961, the number of new cases showed a decrease of about 19 per cent and the current cases a decrease by 30 per cent from 1961-1963. As the re-organisation of referred system took place in October 1964, the statistics on new cases showed a sudden drop by 30 per cent but there was only a slight decrease of 8 per cent on the current case-load. In 1965, the new cases dropped by another 54 per cent but the current case-load increased by 5 per cent. However, from 1963-1965, the total case-load decreased by 30 per cent in comparison to 1961 and 1962.

In comparison to 1964 the number of patients recommended for Tuberculosis Treatment Allowance increased by 10 per cent but the number of patients referred for Public Assistance Allowance decreased by 10 per cent. The total number of citizens who needed welfare aid increased only by five per cent.

From 1961-1963, the number of new cases seen decreased by 19 per cent. However, the number recommended for Tuberculosis Treatment Allowance dropped by 39 per cent. However, comparing 1965 with 1963, the position appeared to be in reverse. The total number of new cases dropped by 69 per cent, but the number of cases recommended for Tuberculosis Treatment Allowance dropped by 23 per cent only. This was probably due to the re-organisation which took place in October 1964, when only those patients who required the Almoner's services were seen by her.

RED CROSS LIBRARY

The Red Cross Society continued to help maintain the Library by voluntary helpers. Magazines and books were distributed to patients by these helpers on Tuesdays and Thursdays. The Hospital is indebted to the Red Cross Society and wishes to express its appreciation for the services so readily provided.

Chapter Twenty-two

TRAFALGAR HOME (LEPROSY)

TRAFALGAR Home is an institution for the segregation and treatment of persons suffering from leprosy. It is situated in a former rubber estate from which it got its name, off the Yio Chu Kang Road, about $8\frac{3}{4}$ miles from the centre of the City.

The Home comprises of hospital ward blocks which form the infirmary section and outbuildings consisting of semi-detached chalets and dormitories for the accommodation of ambulant patients. The total accommodation available was 965 — the reduction in the bed complement being the withdrawal of a ward and its conversion into a workshop for the Occupational Therapy Department.

Patients are admitted if lepræ bacilli are found in their lesions. Admission and discharge of such patients are controlled by the Leprosy Board. Discharges are approved when smears from the skin lesions are found free of lepræ bacilli on four occasions each taken in consecutive months. The Board has relaxed on discharges somewhat in recent years, allowing for “conditional” discharges which are given in special circumstances.

There is an Outpatient Clinic for the treatment of non-infectious patients and for the follow-up of patients discharged from the Home. The staff of the Clinic is also responsible for the Contact Service.

The Contact Service is responsible for maintaining the register of all leprosy patients, tracing contacts, and the surveillance of patients under treatment as out-patients.

Staff

The Medical Superintendent was Dr. Wong Mook Ow. He was selected to participate in a Seminar on Leprosy Control which was held in Manila from 21st April to 28th April, 1965. There were two other Medical Officers attached to the service.

The trend in appointing healthy staff to the Home continued. A qualified Physiotherapist was appointed for the first time to the Home.

In September through to October, Dr. Grace Warren, Medical Superintendent, of the Hay Ling Chau Leprosarium, Hong Kong, assisted by Miss Jean Watson, Physiotherapist, was in the Home to demonstrate methods in corrective surgery for leprosy patients.

Anti-Leprosy Campaign

A Campaign was launched in January 1965, to publicise the advances in medical science which have made leprosy curable. The Campaign was planned to extend through the year, and the plan was divided into three stages:

In the first stage, the main work was in training of personnel in the conduct of the Campaign. Initial publicity was given by radio and television

talks, interviews. Talks were given to schools and teachers and extended to students of the Polytechnique, the Nanyang University, the religious workers and medical personnel in voluntary organizations such as the St. John's Ambulance Brigade.

This culminated with an Anti-Leprosy Week which was opened by an exhibition in which the Head of State presided. The exhibition attracted about 25,000 people. There was a quiz competition open to pupils of secondary schools which received 12,000 entries. A prize-giving ceremony was held in the Home itself on 9th April. The Minister for Health attended the ceremony and presented the prizes.

The second stage consisted of taking the Campaign Exhibition of the work against leprosy, the work done by patients in the Home, to various Community Centres. By the end of the year, 15 Community Centres had participated in the exhibitions.

The exhibition consisted of evening visits to the Community Centres where the exhibitions were held. In these visits, the work of the Home was explained, talks were given together with discussions and film shows.

This was followed by a visit of the Travelling Skin Clinic during the day where any person with any skin condition could attend for treatment.

The Campaign will continue in 1966 when it will concentrate on the schools and conduct a mass survey of school children for leprosy.

Tables that followed are given on the same lines as in previous years for comparison. The downward trend in the admissions of newly discovered "infectious" cases of leprosy is recorded. There were 62 such cases which is the lowest on record. In contrast, discharges for 1965 were the highest for the last five years.

TABLE 117

PATIENTS IN TRAFALGAR HOME ON 31ST DECEMBER, 1965
ADULTS AND CHILDREN (UNDER 12 YEARS OF AGE)

MALES		FEMALES		TOTAL		GRAND TOTAL
Adult	Child	Adult	Child	Adult	Child	
345	34	148	17	493	51	544

TABLE 118

ADMISSIONS AND DISCHARGES

	Males	Females	Total
Patients Remaining on 31st December, 1965	428	166	594
Admissions	230	71	301
Transferred from other hospitals ..	28	8	36
Transferred to other hospitals	30	9	39
Absconded	9	—	9
Discharged	261	70	331
Deaths	7	1	8

TABLE 119

ADMISSIONS IN 1965—BY RACE

	CHINESE		INDIANS		MALAYS		EURASIANS		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Adults ..	180	60	27	1	12	1	—	3	284
Children ..	10	6	—	—	1	—	—	—	17
Total ..	190	66	27	1	13	1	—	3	301

TABLE 120

ADMISSIONS IN 1965—BY CAUSE

	Males	Females	Total
New positive cases ..	47	16	63
Returned Absconders ..	2	—	2
Replaced cases ..	16	5	21
For Orthopaedic treatment ..	166	49	215
Total ..	231	71	301

TABLE 121

DISCHARGES IN 1965

	Males	Females	Total
Disease-arrested, discharged by Leprosy Board	60	27	87
"Negative" cases ..	178	37	215
Conditional Discharges ..	23	6	29
Total ..	261	70	331

TABLE 122

RETURN OF OUTPATIENT ATTENDANCES FOR YEAR 1965

GOVERNMENT SKIN CLINIC, IRRAWADDY ROAD, SINGAPORE 12

Race	NEW CASES					RE-ATTENDANCES				
	Adults		Children		Total	Adults		Children		Total
	Male	Fe-male	Male	Fe-male		Male	Fe-male	Male	Fe-male	
Malays and Other Malaysians ..	8	2	2	—	12	532	152	37	11	732
Chinese ..	118	54	7	7	186	9,476	4,058	272	308	14,114
Indians, Pakistanis and Ceylonese ..	22	4	1	1	28	1,770	169	34	57	2,030
Others ..	3	1	—	—	4	63	26	11	4	104
Total ..	151	61	10	8	230	11,841	4,405	354	380	16,980

Operating Theatre

Since the opening of the Operating Theatre some surgery has been undertaken by the Surgeons and Orthopædic Surgeons. The number of operations that can be conducted are limited as there is no full-time Surgeon available. The Sister who had in the previous year been to India for training in Leprosy had also completed her training in Operating Theatre techniques in the General Hospital and returned to the Home where her contribution to the Home was most valuable.

Occupational Therapy Department

This Department continues to expand its scope of work. The work of the Department not only provides some diversional and Occupational Therapy but also provides some livelihood for the patients. Quality of workmanship has been of high standard.

In September, articles were accepted for display at the international section of the design centre of the Tourist Promotion Board. As a result, several promising enquiries were made on the handbags and cane products. Batches of batek handbags with batek dress lengths to match were shipped to Canada and further orders continue to be received. The response was so good that the Singapore Leprosy Relief Association made a promise of financial aid up to \$10,000 for expansion of the Department to the Sheltered Workshop.

Physiotherapy Department

In addition to the full-time Physiotherapists who were appointed to the Home the services of the Visiting Physiotherapist of the Hay Ling Chau Leprosarium, Hong Kong, was obtained. Her assistance was valuable and the experience she passed on was even more appreciated.

Dental Clinic

The demand for dental treatment is as enthusiastic as before. Extractions with the subsequent provision of dentures were the treatment in the majority of the adult cases. Request for dentures continued throughout the year. A considerable number of dentures was broken and repaired. This occurred in patients who had maimed and deformed hands resulting in inability to handle their dentures proficiently.

Prophylactic scaling and fillings were carried out in selected cases. The nursing staff could assist considerably by constant supervision of the patients in the wards towards maintaining good oral hygiene. The maintenance of good oral hygiene could not be overstressed as frequently patients would return with recurrent caries and abundant calculus on their teeth a short time after they had been cleaned and filled.

Almoner's Department

The social problem of both in and out patients remain the same. Fear, stigma, prejudice and misunderstanding are still the arch enemies of the patients. Until the public is educated about leprosy our patients will continue to suffer mentally and physically.

Owing to the pressure of work due to the Anti-Leprosy Campaign, only one social studies student was placed in Trafalgar Home for practical training.

Throughout the year lectures were given to medical students, nurses-in-training of all categories and Diploma of Public Health Students. Numerous talks were given to religious groups, clubs, associations, etc. These talks were invaluable because not only did they educate the public but also brought in donations and through the sale of occupational therapy handicrafts benefitted the more disabled patients.

Chapter Twenty-three

WOODBIDGE HOSPITAL (PSYCHIATRY)

THE Hospital was built in 1924 and was known as the Mental Hospital. It was renamed Woodbridge Hospital in 1951. It is pleasantly situated in spacious grounds comprising more than 200 acres about eight miles from the City. It is the centre for inpatient psychiatric services for Singapore of 1.9 million population. It has a bed capacity of 1,869.

The Hospital has four clinics running six outpatient sessions per week. They are located at four different regions of the island. One session serves as a consultation service and treatment of milder cases at the General Hospital at Outram Road. Others are serving mainly as follow-up clinics. Outpatients are also treated in Woodbridge Hospital. Criminal or delinquent cases may also be referred to Woodbridge Hospital for opinion. The psychiatrists may be called for consultation by other hospitals at any time.

The staff is also engaged in teaching psychiatry and psychology to the students of the University of Singapore and to nurses.

The Psychiatric Nurse Training School which was started in recent years trains nurses at three levels namely, basic, post-basic and assistant nurse (psychiatric). The total number who successfully completed their training in 1965 was 130.

A Board of Visitors is appointed for the hospital, which is similar practice as that in United Kingdom. The Mental Disorders and Treatment Ordinance may be regarded as modelled on the Mental Health Act in United Kingdom.

Staff

The change from custodial care of patients is seen in the physical changes and in the staffing of the hospital. From 1955, Dental X-ray, Psychological and Occupational Therapy Departments are introduced, and modernization of old blocks started in recent years. Except for the criminal wards, strong iron gates and bars were removed. However, the criminal wards have their own recreational facilities and the patients of these wards are allowed free in their ward compound. Patients are housed in large wards and are not locked-up in separate cells. The layout of these wards is similar to other non-criminal wards.

Patients

The admission, granting of leave and discharge of patients tend to be liberal. No patients were certified in 1964 to 1965.

The different types of patients admitted to the hospital in 1965 were as follows:

(a) Observation	..	..	..	2,195
(b) Voluntary	..	..	..	581
(c) Criminal cases under detention order	..			17
(d) Vagrant (under detention order)	..			4
Total				2,797

In Table 124 on patients given by race, it is noted that the Malay race is not as well represented as the general population. The reason is probably because Malay is more conservative and prefers to seek native treatment. It is doubtful if the reason is a higher tolerance for mental patients (as suggested by an African psychiatrist in his own country).

Alcoholism is rarely encountered among the Chinese and Muslims. Religion forbids Muslims to drink while the Chinese usually drink with their meals or when entertaining their guests and here again food is served. Perhaps this social habit of drinking while eating prevents them from becoming chronic alcoholics. Latah is not seen in clinical practice as it is a transient mental aberration requiring no psychiatric care.

The number of insane murderer are from among the Chinese, Indians and to a lesser extent, the Malays. They are usually confined to males who had hallucinations and delusions about their victims before the murder took place. They differ from the ordinary Schizophrenics in that they have better prognosis. A few possession syndrome and koro cases are also recorded. These cultural determined conditions are likely to become further as with spread of education. For those affected are of lower social group who have little or no education.

There are more males than females in the hospitals as shown in Table 123. This is probably because the females are in a more protected environment. There was a drop of admissions as compared with previous year but a large increase of outpatient attendances.

TABLE 123

SEX DISTRIBUTION IN HOSPITAL POPULATION AND OUTPATIENT ATTENDANCES

<i>Outpatient Attendances</i>				1961	1962	1963	1964	1965
Male	..	..	..	6,789	8,150	10,634	10,566	11,918
Female	..	..	..	7,000	8,518	10,021	9,992	12,168
Total				13,789	16,668	20,655	20,558	24,086
<i>Inpatient Admissions</i>				1961	1962	1963	1964	1965
Male	..	..	..	1,518	1,504	1,618	1,692	1,636
Female	..	..	..	1,040	1,138	1,091	1,170	1,161
Total				2,558	2,642	2,709	2,862	2,797

The inpatient ratio of male:female was 3.2, while the ratio for outpatients was about 1.1.

TABLE 124

DISTRIBUTION BY RACE IN PERCENTAGE AS COMPARED
WITH SINGAPORE POPULATION, 1965

Race				State	Inpatient	Outpatient
Chinese	..	..	..	74.9	85.6	80.7
Malays	..	..	..	14.4	4.7	5.7
Indians, Pakistanis, Ceylonese	..	..	..	8.3	8.5	11.9
Others	..	..	..	2.4	4.2	1.7
Total				100%	100%	100%

About 45 per cent of the admissions were re-admissions. This is being due to liberal granting of leave and discharges and encouraging patients to attend the outpatient clinics. The total number of patients attending the four outpatient clinics for 1965 was 3,508.

The types of mental diseases in the Hospital population and that of a consultation clinic at General Hospital respectively is given in the following lists:

DISTRIBUTION OF MENTAL DISEASES IN WOODBRIDGE
HOSPITAL AT END OF YEAR

				Number	%
1.	Schizophrenia	..	..	1,502	61.8
2.	Manic-Depressive Psychosis	..	..	218	8.9
3.	Involutional Melancholia	..	..	30	1.2
4.	Senile Dementia	..	..	126	5.3
5.	Arteriosclerotic Dementia	..	..	26	1.1
6.	Alcoholic Psychosis	..	..	9	0.4
7.	Organic Psychosis (Toxic and others)	..	..	46	1.8
8.	Psychoneurosis	..	..	15	0.6
9.	Personality Disorders	..	..	16	0.6
10.	Mental Subnormality	..	..	239	9.9
11.	General Paralysis of the Insane	..	..	161	6.6
12.	Epileptic Psychosis	..	..	46	1.8
				2,432	100

For comparison, as sampling of these types of cases seen in one of the outpatient clinics (in the Outram Road General Hospital) over a period of 14 months is as follows:

				Number	%
1.	Neurosis	..	..	159	36.3
2.	Schizophrenia	..	..	156	35.7
3.	Manic-Depressive and Involutional Melancholia	..	..	62	14.2
4.	Mental Defective	..	..	19	4.3
5.	Epilepsy	..	..	12	2.7
6.	Alcoholic/Drug Addiction	..	..	9	2.1
7.	Organic Dementia	..	..	9	2.1
8.	Organic Concussional State excluding conditions above	..	..	5	1.1
9.	Homosexuality	..	..	2	.5
10.	Post Concussional Syndrome	..	..	2	.5
11.	Personality Disorders	..	..	2	.5
				437	100

New Buildings

1956 — four new blocks of double storeyed building with a capacity of 60 patients and one dining/rest room each.

1957 — a block of new nurses hostel.

1958 — three blocks of building for the mental defectives.

1962 — the Recreation Hall was reconstructed from an ex-medical store building. It has a sitting capacity for 200 persons.

The staff of the hospital is given below :

	1950	1955	1960	1965
Qualified Psychiatrist with D.P.M. ..	2	2	2	5
Medical Officer	3	6	6	8
Psychologist	—	1	1	1
Occupational Therapist	—	2	3	3
Psychiatric Nurse	20	33	93	310
Nursing Orderlies	398	458	490	481
Dietitian	—	—	1	1
Radiographer	—	—	1	1
Part-time Dental Surgeon	—	—	1	1
Farm Supervisor	—	1	1	1
Pharmacist	—	1	1	1

The Occupational Therapy Departments are divided into male and female sections. Similarly both male and female nursing staff are under independent administrative heads namely the Chief Nurse (Man) and the Matron respectively.

The male patients help in the wards, gardening, carpentry — stools, tables, chairs made or repaired and rug making. A small number is engaged in washing and sewing.

The female patients also help in the wards, washing, tailoring, stitching, embroidery, basketry and other handicraft.

Both male and female patients have social gatherings twice per week. Occasional outing is also provided.

Training Programme

(a) *Psychiatrist*.—Three Medical Officers are now receiving training in United Kingdom.

(b) *Psychologist*.—One under training in Australia, expected to complete training in 1966-7.

(c) *Psychiatric Social Worker*.—One under training in University of Singapore.

(d) *Nurses*.—The Psychiatric Nursing Training School at Woodbridge Hospital is conducting the training with assistance from other members of Woodbridge Hospital Staff.

(e) *Occupational Therapist*.—One under training in Australia.

Chapter Twenty-four

ST. ANDREW'S ORTHOPÆDIC HOSPITAL

THE Hospital is situated in the seaside in Siglap. It has accommodation for 120 beds for children under treatment for diseases of the bones and joints. The chief of these were for tuberculosis of the joints and of the spine and osteomyelitis. The incidence of these, however, are decreasing. The Hospital is administered by the General Hospital.

The Resident Medical Officer is Dr. S. C. Pereira. The Visiting Surgeons are from the Orthopædic Units of the General Hospital and the Occupational Therapy and Physiotherapy services are also provided by the visiting staff drawn from the General Hospital.

In 1965, 305 patients were admitted to the Hospital and there were 165 discharges.

School sessions are arranged for the children and teaching is provided by a staff of four teachers and another teacher conducts Mandarin classes in the afternoons.

Voluntary helpers did much to cheer the children and help to brighten up the hospital and surroundings. Film shows were shown once a month by the Independent Missionary Movement. Children are entertained by various organisations drawn from the armed services and by Boy Scouts and others.

Chapter Twenty-five

THE OUTPATIENT SERVICES

THE Outpatient Services began as an outpatient department of the General Hospital and has expanded and now runs outpatient dispensaries in different parts of Singapore, including the neighbouring islands of Pulau Brani and Pulau Tekong.

In 1964 a reorganisation took place and the Outpatient Services established its headquarters at Maxwell Road. Now the Outpatient Services has under its administration the following sections:

- (i) The 26 Outpatient Dispensaries;
- (ii) The Island and Travelling Outpatient Dispensaries:
 - (a) The Pulau Tekong and Pulau Brani Clinics;
 - (b) The travelling dispensaries of which there are five;
 - (c) Three Rural East Travelling Dispensary Centres: Jalan Eunos; Gulega Road, Changi Point.
- (iii) The Staff Clinics:

Two Officials' Clinics at General Hospital and three Staff Dispensaries at Rochore House, Jalan Berseh and Alexandra Road.
- (iv) The institutional hospitals:

Two Prison Hospitals at Changi and Outram Road, and Reformatory Training Centre Dispensary at Ulu Bedok;
Opium Treatment Centre at St. John's Island.

Staff

The staff consists of:

- (a) A superscale 'E' Administrative Medical Officer-in-charge of Outpatient Services. Dr. Toh Chiong Hieng was in-charge until 29th June, 1965 when he went on leave on 30th June, 1965 prior to his retirement on 3rd September, 1965. Dr. Leong Hon Koon took over the administration as Acting Medical Officer in-charge Outpatient Services from 30th June, 1965.
- (b) A superscale 'G' Administrative Deputy Medical Officer-in-charge of Outpatient Services. Dr. Leong Hon Koon was the Deputy

Medical Officer in-charge Outpatient Services till September 1965, when Dr. S. L. Sarma was appointed to be the acting Deputy Medical Officer-in-charge Outpatient Services.

- (c) A Senior Pharmacist in-charge of Dispensing staff and Dispensing Service of the Outpatient Services.
- (d) A Matron in-charge of Nursing Service and Nursing Staff of the Outpatient Services.
- (e) A Senior Hospital Assistant in-charge of Hospital Assistants and Division IV Staff.
- (f) The other staff of Administrative Headquarters and Outpatient Dispensaries, etc. are shown in Table 125.

TABLE 125

OUTPATIENT SERVICES

The following table shows the Distribution of Staff in the 26 Outpatient Dispensaries:

Outpatient Dispensaries	Medical Officers		Pharmacist	Sister	Nurses	Male Nurses	Hospital Assistants	Clerks	Laboratory Technicians	Dispensing Assistants	Medical and Health Servants
	F.T.	P.T.									
1. Aljunied Road*	2	..	..	..	3	..	2	1	..	..	4
2. Bukit Panjang	2	..	..	..	2	..	..	2	1	2	7
3. Bukit Timah	1	..	..	..	2	..	..	2	..	1	3
4. Desker Road	1	..	..	..	2	..	1	1	..	..	3
5. Dunearn Road	1	..	..	..	2	..	1	1	..	..	3
6. Holland Road	(Functions on every Wednesday morning with the same Staff from Pasir Panjang O.P. D.)										
7. Jalan Kayu	1	..	..	..	1	..	..	1	..	1	5
8. Kallang ..	5	..	1	1	4	1	..	4	2	5	14
9. Kampong Bugis	1	1	..	..	2	..	1	2	..	1	4
10. Kee Seng Street	1	..	..	..	2	..	..	1	..	..	3
11. Lim Ah Pin	1	..	..	..	2	..	..	2	..	1	4
12. Maxwell Road	3	2	1	1	2	2	..	2	2	2	10
13. New Bridge Road	2	..	..	..	2	..	1	1	..	..	4
14. Pasir Panjang	1	..	..	..	2	..	1	1	..	..	2
15. Paya Lebar	3	..	..	1	2	..	1	2	1	2	10
16. Pegu Road	3	..	1	..	2	..	1	2	1	2	9
17. Prince Philip Avenue ..	1	..	..	..	2	..	1	1	1	2	3
18. Queenstown	2	3	1	..	2	..	..	2	1	..	9
19. Rochore (Prinsep Street)	3	2	1	..	3	..	..	2	3	3	9
20. Sembawang	1	..	..	..	2	..	..	2	1	1	5
21. Somapah ..	1	..	..	..	2	..	..	2	1	1	5
22. Still Road	3	1	1	..	3	..	..	1	1	3	13
23. Stirling Road	1	..	..	..	1	..	1	1	..	..	2
24. Thomson Road	1	..	..	..	2	..	..	1	..	1	3
25. Tiong Bahru	3	..	1	..	3	..	..	1	..	2	7
26. Upper Serangoon Road	1	..	..	..	2	..	1	1	..	..	3

Note: F.T.=Full Time; P.T.=Part-time.

* The Staff of Aljunied Road O.P.D. were transferred to MacPherson Road Estate O.P.D. in November, 1965.

TABLE 133

The following shows the Distribution of Staff in:—

- (i) Five Part-time Outpatient Dispensaries.
- (ii) Five Travelling Dispensaries.
- (iii) Five Staff Dispensaries.
- (iv) Six Institutions and Hospitals.

	<i>Medical Officers</i>	<i>Nurses</i>	<i>Male Nurses</i>	<i>Hospital Assistants</i>	<i>Clerks</i>	<i>Dispensing Assistants</i>	<i>Medical and Health Servants</i>	<i>Drivers</i>
(i) Pulau Tekong	1 p.t.	—	—	1	—	—	—	—
Pulau Brani	—	—	—	1	—	—	—	—
Changi Point	1 p.t. with the same Staff from Travelling Dispensary No. 4.							
Gulega Road	1 p.t. with the same Staff from Travelling Dispensary No. 4.							
Kampong Batak	1 p.t. with the same Staff from Travelling Dispensary No. 3.							
(ii) Travelling Dispensary No. 1	—	—	—	1	—	—	1	1
Travelling Dispensary No. 2	—	—	1	—	—	—	1	1
Travelling Dispensary No. 3	—	—	—	1	—	—	1	1
Travelling Dispensary No. 4	—	—	—	—	—	1	1	1
Travelling Dispensary No. 5	—	—	1	—	—	—	1	1
(iii) Alexandra Road	1	—	1	2	1	—	4	—
Jalan Berseh	2	—	1	2	2	—	3	—
Junior Officials'	2	1	—	—	1	—	6	—
Rochore House	2	1	—	2	1	—	4	—
Senior Officials'	1	1	—	—	—	—	3	—
(iv) Police Training School Hospital	1	—	1	—	—	—	4	—
Police Families Clinic	—	2	—	—	—	—	—	—
Changi Prison Hospital	1	—	5	2	—	—	—	—
R.T.C. Ulu Bedok	1 p.t.	—	1	—	—	—	—	—
Local Prison Hospital	1	—	7	—	—	1	—	—
Opium Treatment Centre (St. John's Island)	1 p.t.	—	2	—	—	—	—	—

Administrative Headquarters

The Administrative Headquarters of the Outpatient Services is housed in the second floor of Maxwell Road Outpatient Dispensary Building. The Administrative Office was expanded to take over the administration which had previously been done by the General Hospital. The following sections of office administration were moved to Maxwell Road from 26th November, 1965:

- (a) Establishment Section
- (b) Salary Section
- (c) Vote Book Section
- (d) Financial Section
- (e) Chief Hospital Assistant Section
- (f) Medical Reports Section
- (g) Store Section.

The other section which had already moved to Maxwell Road Headquarters prior to the above transfer was the Revenue Section.

In order to supplement the staff of these sections, five clerks were recalled from the Outpatient Dispensaries. The Administrative Office had a lack of Division II officers of the Executive Service who are required to perform the duties under certain sections of the Instruction Manual.

The administration of the vehicles was also taken over but there was no garage to house the Travelling Dispensaries and the two vans. Consequently, the present vehicles have been garaged temporarily in the General Hospital Garage.

There was no accommodation for carpenter's and plumber's workshops, linen room and stores.

Development

The MacPherson Road Estate Outpatient Dispensary was officially opened in December 1965. This dispensary occupied the ground floor of a block of Housing Board Flats at MacPherson South Housing Estate. It is a 3-Doctor Clinic and it was planned for the treatment of 400-500 patients a day. When the building was ready at the end of 1965, the Outpatient Dispensary at Aljunied Road was shifted into this building. The space accommodation was adequate but there was a shortage of staff and equipment for the full functioning of this Outpatient Dispensary, as the complement of staff that was transferred from Aljunied Road Outpatient Dispensary was originally provided for a one-doctor Clinic only. After the opening of this Outpatient Dispensary,

it was observed that there was a great demand from the people living in the area, and it is expected that the demand will increase when more flats in the area are occupied.

Proposed new Pasir Panjang Outpatient Dispensary

This new Pasir Panjang Outpatient Dispensary was planned to be built on the old Haw Par Swimming Pool site. It was intended to be a two-Doctor Outpatient Dispensary to be housed together with Maternal and Child Health Clinic in the same building, but due to lack of funds, the planning had to be reduced to a one-Doctor Outpatient Clinic. The plan was being prepared by the Senior Architect, P.W.D.

Attendances

The Outpatient attendance for the year of all categories of patients in the Outpatient Services was 2,175,485. A breakdown shows the attendances in the different sections is given in Tables 134 and 135.

During the year, the number of minor accident cases seen at Outpatient Dispensaries were 25,868 and number of Police cases were 1,509.

Outpatient Dispensaries

The 26 Outpatient Dispensaries provide full-time Medical Service (i.e. 8.30 a.m. to 4 p.m.) with the exception of Holland Road Outpatient Dispensary, which opens on Wednesdays (morning) only. All these Outpatient Dispensaries charge a nominal fee of 50 cents for each outpatient attendance.

Since January 1965, the 26 Outpatient Dispensaries have been receiving cases brought by Police, of minor accidents, minor injuries and drunkenness in addition to minor injury cases (of non-medico-legal nature), which the Outpatient Dispensaries had undertaken to treat soon after re-organisation of Outpatient Services in 1964 (August).

The number of minor accident cases treated in the Dispensaries totalled 23,868. The number of Police cases were 1,509.

The monthly outpatient attendances in the 26 Outpatient Dispensaries during the year 1965 are given in Tables 136 and 137.

These attendances figures are given for the 26 Outpatient Dispensaries where charges were imposed. They show that the attendances have not increased or decreased markedly. There was, in fact, a slight decrease at the onset with a tendency to a slight increase at the end of the year.

This is an indication that the Outpatient Dispensaries were not being swamped as a result of closure of General Hospital Outpatient Dispensary nor were they being emptied as a result of the imposition of the 50 cents fee. Attendances of "doctor's cases" (consultation — new and repeat) and "nurse's cases" (injections and dressings), shows that while the doctor's cases tended to increase the "nurse's cases" tended to fall.

Island Clinics and Travelling Dispensaries

In addition to the abovementioned 26 Outpatient Dispensaries which are charging nominal fees for outpatient treatment, there are other Clinics which still render free medical service to the public. They are:

- (1) Pulau Tekong Clinic
- (2) Pulau Brani Clinic
- (3) Travelling Dispensary Centres at Changi, Gulega Road and Jalan Eunos
- (4) Five Travelling Dispensaries.

Pulau Tekong Clinic

Pulau Tekong Clinic has a Hospital Assistant in-charge. One part-time Medical Officer visits this Island Clinic twice a week on Wednesday and Friday mornings.

Pulau Brani Clinic

Pulau Brani Clinic has one Hospital Assistant in-charge. He treats cases of minor illness and sends cases of serious illness to other Outpatient Dispensaries or to General Hospital.

TABLE 134

OUTPATIENT SERVICES, MAXWELL ROAD
OUTPATIENT ATTENDANCES FOR THE YEAR 1965

I. Outpatient Dispensaries:			NEW CASES			REPEAT CASES			New and Repeat Cases	Injections and Dressings	Grand Total
			Male	Female	Children	Male	Female	Children			
1.	Aljunied Road O.P.D. (till 17-11-65)	..	4,624	4,239	7,070	8,984	9,356	11,234	45,507	11,201	56,708
	MacPherson Road Estate O.P.D. (w.e.f. 22-11-65)	..	1,155	1,399	2,653	497	630	501	6,835	1,519	8,354
2.	Bukit Panjang O.P.D.	..	5,153	4,702	8,238	12,641	10,779	12,107	53,620	15,123	68,743
3.	Bukit Timah O.P.D.	..	3,271	3,618	5,348	4,390	5,755	6,708	29,090	13,430	42,520
4.	Desker Road O.P.D.	..	2,784	4,597	8,432	3,495	9,158	10,965	39,431	9,236	48,667
5.	Dunearn Road O.P.D.	..	4,180	3,537	5,681	6,062	4,302	5,953	29,715	9,223	38,938
6.	Holland Road O.P.D. (every Wednesday only)	..	158	310	583	517	406	523	2,497	7	2,504
7.	Jalan Kayu O.P.D.	..	1,295	912	2,219	6,459	6,136	7,242	24,263	11,771	36,034
8.	Kallang O.P.D.	..	10,434	10,243	13,597	23,893	30,298	35,448	123,913	53,278	177,191
9.	Kampong Bugis O.P.D.	..	1,940	2,157	3,091	7,100	10,032	13,275	37,595	8,800	46,395
10.	Kee Seng Street O.P.D.	..	4,087	3,468	2,384	7,152	6,187	6,334	29,612	4,687	34,299
11.	Lim Ah Pin O.P.D.	..	2,086	2,600	3,946	4,858	7,136	8,596	29,222	17,201	46,423
12.	Maxwell Road O.P.D.	..	8,922	10,423	11,250	16,682	20,027	21,354	88,658	33,417	122,075
13.	New Bridge Road O.P.D.	..	6,166	4,738	4,448	11,454	10,333	9,527	46,666	22,090	68,756
14.	Pasir Panjang O.P.D.	..	2,236	1,940	3,365	5,671	4,122	4,558	21,892	7,932	29,824
15.	Paya Lebar O.P.D.	..	3,343	5,894	8,548	17,324	15,127	12,930	63,166	38,282	101,448
16.	Pegu Road O.P.D.	..	6,616	6,917	7,106	13,778	14,391	17,594	66,402	15,779	82,181
17.	Prince Philip Avenue O.P.D.	..	2,603	2,948	4,433	5,492	6,290	15,191	36,957	8,622	45,579
18.	Queenstown O.P.D.	..	4,618	5,366	9,082	11,072	15,150	18,819	64,107	17,039	81,146
19.	Rochore O.P.D.	..	5,851	5,351	6,232	15,811	18,555	21,300	73,100	19,051	92,151
20.	Sembawang O.P.D.	..	3,621	2,833	3,832	7,431	5,609	10,407	33,733	10,675	44,408
21.	Somapah O.P.D.	..	2,416	2,126	3,560	7,749	5,927	11,798	33,576	21,117	54,693
22.	Still Road O.P.D.	..	7,994	10,752	12,901	11,446	18,647	22,851	84,591	34,470	119,061
23.	Stirling Road O.P.D.	..	1,423	1,428	2,612	5,134	4,513	6,326	21,436	6,262	27,698
24.	Thomson Road O.P.D.	..	4,556	1,877	3,306	3,303	2,022	3,661	18,725	10,605	29,330
25.	Tiong Bahru O.P.D.	..	5,001	6,665	8,132	11,898	21,536	24,984	78,216	33,181	111,397
26.	Upper Serangoon Road O.P.D.	..	2,008	2,089	3,977	5,075	6,399	10,526	30,074	13,678	43,752
			108,541	113,129	156,026	235,368	268,823	330,712	1,212,599	447,676	1,660,275

TABLE 135

OUTPATIENT SERVICES, MAXWELL ROAD
OUTPATIENT ATTENDANCES FOR THE YEAR 1965

HOSPITALS AND RELATED SERVICES 1965										213
		NEW CASES			REPEAT CASES			Injec- tions and Dressings	Grand Total	
		Male	Female	Children	Male	Female	Children			
II. Part-time Outpatient Dispensaries										
Changi Point Outpatient Dispensary	..	203	311	543	299	652	854	554	3,416	
Gulega Road Outpatient Dispensary	..	61	179	251	303	564	771	416	2,545	
Kampong Bugis Outpatient Dispensary	..	151	792	1,045	371	1,832	2,211	467	6,869	
Pulau Brani Outpatient Dispensary	..	114	69	276	3,044	1,309	2,383	4,493	11,688	
Pulau Tekong Outpatient Dispensary	..	61	41	329	1,039	1,463	2,457	2,595	7,985	
	Total	590	1,392	2,444	5,056	5,820	8,676	8,525	32,503	
III. Travelling Dispensaries										
Travelling Dispensary No. 1	..	949	1,746	2,259	7,762	13,981	17,343	2,055	46,095	
Travelling Dispensary No. 2	..	6,096	7,476	11,272	3,159	4,589	695	2,895	36,182	
Travelling Dispensary No. 3	..	1,378	5,377	6,881	3,807	14,408	18,360	3,601	53,812	
Travelling Dispensary No. 4	..	613	1,229	2,535	3,759	6,227	8,836	3,744	26,943	
Travelling Dispensary No. 5	..	302	406	613	4,049	5,449	6,851	1,280	18,950	
	Total	9,338	16,234	23,560	22,536	44,654	52,085	13,575	181,982	

TABLE 135—*continued*.

OUTPATIENT SERVICES, MAXWELL ROAD
OUTPATIENT ATTENDANCES FOR THE YEAR 1965

		NEW CASES			REPEAT CASES			New and Repeat Cases	Injections and Dressings	Grand Total
		Male	Female	Children	Male	Female	Children			
IV.	<i>Staff Dispensaries</i>									
	Alexandra Road Staff Dispensary ..	..	24,297	335	—	2,183	42	—	26,857	31,370
	Jalan Berseh Staff Dispensary ..	..	43,854	—	—	—	—	—	43,854	50,638
	Junior Officials ..	..	5,721	2,248	1,374	10,277	3,573	1,739	24,932	33,171
	Rochore House Staff Dispensary ..	..	27,076	1,935	—	1,191	86	—	30,288	33,839
	Senior Officials ..	..	2,175	2,014	926	4,224	3,506	1,261	14,106	18,021
	Total ..	103,123	6,532	2,300	17,875	7,207	3,000	140,037	27,002	167,039
		* Including Vaccination and Innoculation. New Recruits — (M.O.J.O. — 5,259) (M.O.S.O. — 1,389)								
V.	<i>Other Institutions and Hospitals</i>									
	Police Training School Hospital ..	..	2,598	—	—	17,399	—	—	19,997	39,848
	Police Family Clinic ..	..	—	214	360	—	7,458	16,774	24,806	25,025
	Changi Prison Hospital ..	..	1,146	213	634	33,398	757	2,276	38,424	50,266
	Local Prison Hospital ..	..	498	115	—	9,005	3,971	—	13,589	18,547
	Opium Treatment Centre (St. John's Island) ..	..	No Outpatients			(In-Patient — 465)				
	Total ..	4,242	542	994	59,802	12,186	19,050	96,816	36,870	133,686

TABLE 136

MONTHLY TOTAL NUMBER OF OUTPATIENT ATTENDANCES
FROM AUGUST 1963 TO DECEMBER 1965

<i>Month</i>				<i>New and Repeat Cases</i>	<i>Injections and Dressings</i>	<i>Total</i>
<i>1963</i>						
August	..	..	..	93,274	63,714	156,988
September	..	..	..	86,854	58,950	145,804
October	..	..	..	101,634	70,485	172,119
November	..	..	..	92,001	62,848	154,849
December	..	..	..	99,645	49,889	149,534
<i>1964</i>						
January	..	..	..	98,396	64,131	162,527
February	..	..	..	62,546	47,489	109,662
March	..	..	..	82,546	55,770	138,316
April	..	..	..	91,237	60,735	152,458
May	..	..	..	90,237	49,600	139,837
June	..	..	..	88,630	65,225	153,855
July	..	..	..	76,652	55,837	132,489
August	..	..	..	79,981	37,033	117,014
September	..	..	..	80,933	30,510	111,443
October	..	..	..	93,408	38,785	132,193
November	..	..	..	88,531	36,405	124,936
December	..	..	..	94,651	40,193	134,884
<i>1965</i>						
January	..	..	..	91,417	34,737	126,154
February	..	..	..	72,228	27,168	99,396
March	..	..	..	109,062	27,203	146,265
April	..	..	..	103,858	32,283	136,141
May	..	..	..	103,563	32,832	136,395
June	..	..	..	103,739	36,688	140,427
July	..	..	..	97,425	39,243	136,668
August	..	..	..	101,567	41,316	142,883
September	..	..	..	100,783	42,067	142,850
October	..	..	..	101,165	41,778	142,943
November	..	..	..	112,293	42,374	154,667
December	..	..	..	115,012	39,987	154,999

Travelling Dispensary Centres

Travelling Dispensary Centres at Changi Point, Gulega Road and Jalan Eunos were visited by Travelling Dispensary in the afternoons with the part-time Medical Officer, according to the schedule as given below:

Changi Point	—	2 p.m. to 4 p.m. on Monday and Wednesday afternoons.
Gulega Road	—	on Tuesday afternoons.
Jalan Eunos	—	on Tuesday and Friday afternoons.

During the year, the outpatient attendances at these three Centres were:

		<i>New and Repeat Cases</i>	<i>Injection and Dressing</i>
Changi Point	..	2,862	554
Gulega Road	..	2,129	416
Jalan Eunos ..	..	6,402	467

Travelling Dispensaries

Five Travelling Dispensaries, each with one Hospital Assistant in-charge visit the Rural areas of Singapore daily, according to the fixed time Schedule. During the year, the total outpatient attendances were as follows:

<i>New and Repeat Cases</i>	<i>Dressing</i>
168,407	13,575

Laboratory Services at Outpatient Dispensaries

At the beginning of 1965, there were five Laboratories functioning at the Outpatient Dispensaries. They are:

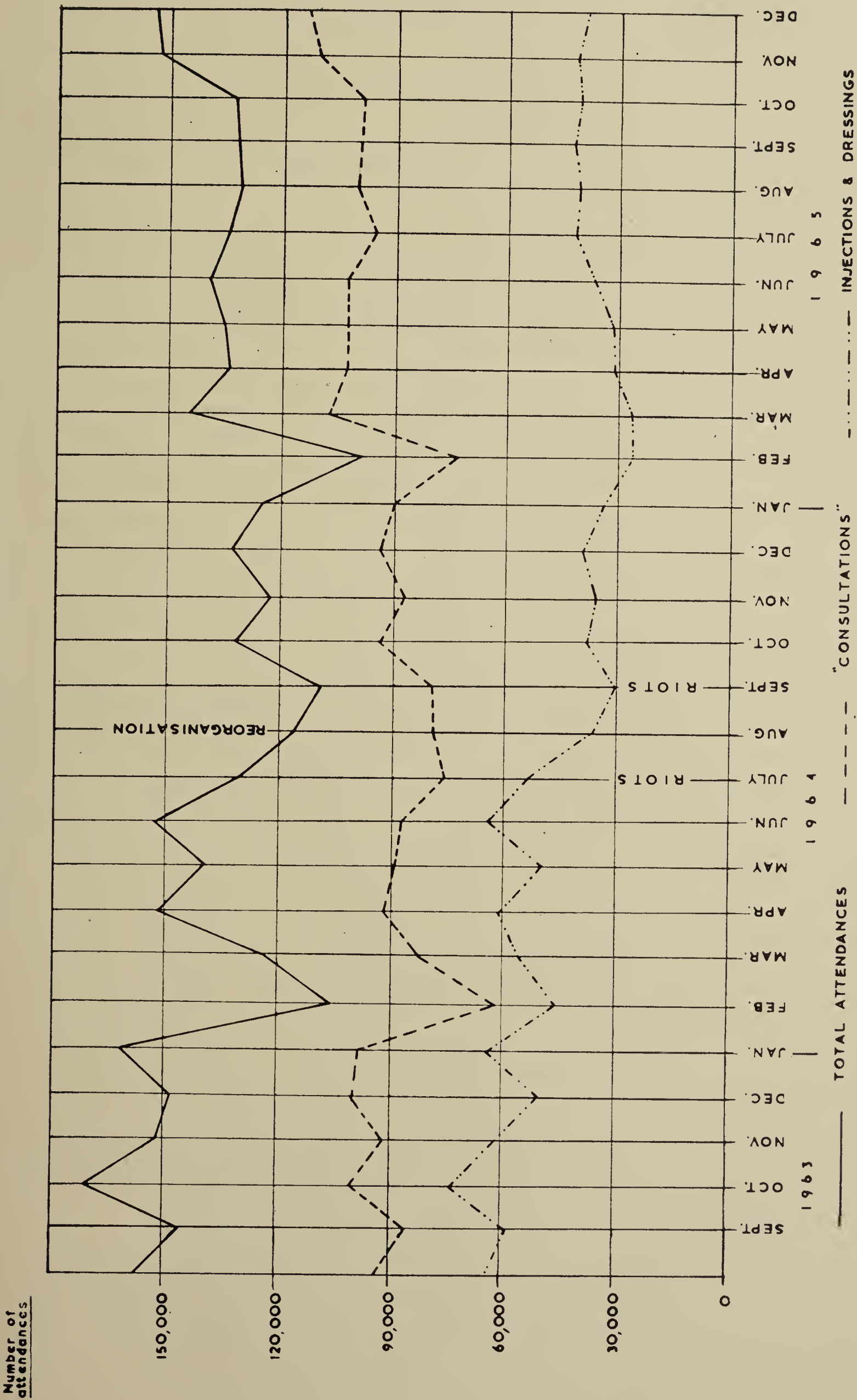
Maxwell Road Outpatient Dispensary
Kallang Outpatient Dispensary
Paya Lebar Outpatient Dispensary
Pegu Road Outpatient Dispensary
Bukit Panjang Outpatient Dispensary.

In May 1965, two more Laboratories (one at Queenstown Outpatient Dispensary and the other at Still Road Outpatient Dispensary) started functioning. Each has one Laboratory Technician-in-charge.

The total number of specimens examined during 1965 in the seven Outpatient Dispensaries Laboratories were:

<i>Outpatient Dispensaries</i>			<i>Blood</i>	<i>Urine</i>	<i>Stool</i>	<i>Smears</i>	<i>Total</i>
Maxwell Road	..	..	4,392	7,324	751	622	13,089
Kallang	..	..	5,104	18,651	1,284	545	25,584
Pegu Road	..	..	1,845	3,897	241	59	6,042
Paya Lebar..	..	..	2,951	4,847	1,321	189	9,308
Bukit Panjang	..	..	633	1,644	242	41	2,560
Queenstown	..	..	1,722	3,136	1,033	149	6,040
Still Road ..	..	..	1,954	4,414	1,053	186	7,607

TABLE 137
MONTHLY TOTAL NUMBER OF OUTPATIENT ATTENDANCES
FROM AUGUST 1963 TO DECEMBER 1965



*Staff Clinics**Senior Officials' Clinic*

This Clinic treats Government Officers drawing a salary of over \$400 basic, their wives and families. Patients attended throughout the day, though the afternoons have by arrangement been allotted to medical examination of recruits and medical boards.

There is one Medical Officer working in the Clinic. The number of patients treated during the year were:

New Patients	..	..	..	5,115
Repeat Cases	..	..	..	8,991
			Total	<u>14,106</u>
Vaccination and Inoculation	..	..	..	2,158 cases
Medical Boards	..	..	..	30 cases
Recruits of Medical Examination			..	1,389 cases
Injections	..	..	..	425 cases
Dressings	..	..	..	1,332 cases

Junior Officials' Clinic

This Clinic treats Government Officers drawing a basic salary below \$400 per month, also their wives and children under school age. Sick patients are treated in the mornings. Candidates entering Government Service are examined in the afternoons. Medical Boards are held weekly in the afternoons.

There are two Medical Officers working in the Clinic. The outpatient attendances were as follows:

New Cases	..	..	..	9,343
Repeat Cases	..	..	..	15,589
Injection and Dressing		..	..	8,239
No. of Recruits examined	..	..	..	5,259

Staff Dispensaries

The three Staff Dispensaries are situated at Rochore House, Jalan Berseh and Alexandra Road. In these Dispensaries the Medical treatments were given mainly to the City Council Integrated Staff, and Staff of Public Utility Board and Housing and Development Board. The number of Medical Officers in these three Staff Dispensaries are as follows:

Rochore House Staff Dispensary	..	..	2 Medical Officers
Jalan Berseh Staff Dispensary	..	..	2 Medical Officers
Alexandra Road Staff Dispensary	..	..	1 Medical Officer

The number of patients treated at these Dispensaries during 1965 are given below:

		<i>New and Repeat Cases</i>	<i>Injection and Dressing</i>	<i>Total</i>
Rochore House Staff Dispensary	..	30,288	3,551	33,839
Jalan Berseh Staff Dispensary	..	43,854	6,784	50,638
Alexandra Road Staff Dispensary	..	26,857	4,513	31,370

Police Hospital Clinic

The Police Training School Clinic and Hospital are situated at the Police Training School, Thomson Road and this provides medical services for the members of Police Force, which numbers about 6,000 men now.

During the year, a total of 19,997 cases were examined, apart from 1,248 recruits. A total of 16,065 injections and 3,786 dressing were carried out.

There is one Medical Officer, working in this Hospital. In addition to his duties in the Police Hospital, he visits Central Police Station and C.I.D. lock-ups daily to carry out medical inspection of detainees.

Police Family Clinic

The Police Family Clinic is situated at the Hill Street Police Quarters. The Staff Nurse in-charge of the Clinic visits the various Police Stations and gives advice to Police Families and children who are having minor illness and sends more serious cases to the nearest Outpatient Dispensary. During the year, 24,232 outpatient attendances were recorded.

Institutional Hospitals

Changi Convict Prison

The Changi Prison and Clinic were staffed by a Medical Officer, three Hospital Assistants and four male nurses.

The Hospital has a bed complement of 54, divided into three wards with another portion for lepers and two cells for observation or isolation cases.

The total number of outpatient attendances during the year were 38,424 new and repeat cases and 11,842 injections and dressings. A total of 154 patients were admitted into the Prison Hospital. The number of minor operations performed during the year was 71. The Dental Officer visits the Prison once a week and examined 1,711 cases in the year.

Reformatory Training Centre at Ulu Bedok

The Medical Officer i/c Changi Prison Hospital attended to the sick inmates of the R.T.C. every morning. A full-time Male Nurse was seconded to the R.T.C. as from 1st April, 1965. There is a 12-bed Ward attached to the Dispensary. During the year, 69 cases were admitted to the R.T.C. Ward.

A total of 21,553 cases were treated and 2,534 injections given. The number of dressings done were 1,499.

The mobile dental Clinic visited the Centre once in two weeks.

Local Prison Hospital

The Local Prison Hospital in 1965 consists of:

- (a) The Hospital Wards with 48 beds
- (b) An Outpatient Clinic
- (c) A Dispensary
- (d) A Dental Clinic
- (e) A Medical Officer's room
- (f) Medical inspection room

Staff consists of the Medical Officer in-charge, who is also the Medical Officer in-charge of the Opium Treatment Centre, seven male nurses and a dispensing assistant.

The total number of prisoners admitted to the Local Prison in 1965 was 5,637 and daily population was 582. The admissions to the Hospital were 619 giving a ratio of hospital admissions to prison admissions of 10.98 per cent. There were 315 admissions of drug addiction in the year.

There were 80 cases of pulmonary tuberculosis and 10 cases of malaria.

The total number of outpatients was 13,591 comprising of 615 new cases and 12,976 repeat cases.

The number of vagrants at the end of 1965 was 280, of these 20 are in the Prison Hospital.

Opium Treatment Centre

The Opium Treatment Centre is situated at the St. John's Island and it has a hospital ward of 22 beds. There are workshops and residential Camps.

The staff consists of one full-time Medical Officer, who is also M.O. i/c Local Prison, one lay Superintendent, three rehabilitation officers, two male nurses, clerical staff and a warder/attendant complement of 28.

There were 522 admissions to the Centre during the year, of whom 397 or 76 per cent were volunteers.

District Nursing Service

The District Nursing Service started in 1958 and it is giving after care service to the patients in their homes and help in their rehabilitation. This Service is also providing nursing care in Temples and homes for the aged (private enterprise), through recommendation by the Almoner, until accommodation are available in the Chronic Hospital to house the inmates.

Total number of new patients reviewed in 1965 were 467 (149 orthopaedic, 167 surgical and 151 medical cases).

Total number of patients visited during the year were 1,486. Total number of nursing visits to the patients' homes were 11,746. Total number of supervisory visits made by the Sister were 633.

Staff consists of one Sister and Eight Staff Nurses.

Revenue

Prior to 1st August, 1964 there were 12 Outpatient Dispensaries collecting fees. The total revenue collected for the period 1st January, 1964 to 31st July, 1964 was \$120,282.

From 1st August, 1964, on re-organisation, another 14 Outpatient Dispensaries commenced to collect fees. The total revenue collected from 1st August, 1964 to 31st July, 1965 for the 26 Dispensaries was \$561,236.50.

The total expenditure for 1964 was \$3,417,215.60 for medical facilities rendered to 1,301,276 patients (excluding Staff Dispensaries). The total all-in cost is \$2.62 per patient.

Drugs and Chemicals

The rise and fall of prices of certain drugs used in great quantities in the outpatient dispensaries have a natural effect on costs.

Tolbutamide, an anti diabetic drug, is expected to show a great increase in consumption, as more diabetics are referred to the outpatient dispensaries from the closure of General Hospital and Kandang Kerbau Outpatient Dispensaries, from medical units, general practitioners, and as a result of detection of new cases.

Drugs used in psychiatric outpatient treatment will also show increased consumption as the number of psychiatric clinic sessions total five per week and patients have increased by 100 per cent since re-organisation.

Tuberculosis is another disease, the treatment of which is long drawn out and consequently expensive.

All in all, taking Pegu Road as a standard, the approximate average cost per patient is 35 cents for drugs. In contrast, a psychiatric patient costs between \$4 and \$5.

Chapter Twenty-six

DEPARTMENT OF RADIOLOGY

THE total number of X-ray examinations made in 1965 was 296,645, compared with 280,731 in 1964, i.e. a slight overall increase of 5.7 per cent. This increase is in all institutions except in the General Hospital; this may be because the Thomson Road General Hospital and the recently opened medical wards of the Tan Tock Seng Hospital had taken some of the load off the Outram Road General Hospital. Another likely contributory factor would be that with the stoppage of outpatients service in the General Hospital, only needy patients would be referred for X-ray examinations to the General Hospital. However, in the General Hospital itself, there had been an overall increase of specialised X-ray examinations in 1965 compared with 1964. Table 138 shows a comparison of number of patients radiographed for the years 1965 and 1964.

TABLE 138

DIAGNOSTIC X-RAY EXAMINATIONS PERFORMED, 1965

				<i>Patients X-rayed</i>		<i>Total X-ray Examinations</i>	
				<i>1965</i>	<i>1964</i>	<i>1965</i>	<i>1964</i>
General Hospital	..	..	..	70,719	91,781	82,807	93,198
Tan Tock Seng Hospital	..	..	..	82,645	83,144	83,749	84,144
Kandang Kerbau Hospital	..	..	..	7,551	6,587	7,989	6,857
Woodbridge Hospital	..	..	..	3,755	3,387	3,755	3,387
Institute of Health	..	..	..	22,027	18,651	22,027	18,651
T.B. Control Unit	..	..	..	86,439	74,076	86,439	74,076
Thomson Road General Hospital	..	..	..	8,152	418	9,879	418
				<hr/> 276,288	<hr/> 278,044	<hr/> 296,645	<hr/> 280,731

DIAGNOSTIC

Staff

(a) *Radiologists*.—The Senior Radiologist was Dr. Khoo Fun Yong; and the radiologist staff consisted of three radiologists; a medical officer qualified in radiology and two trainees in the U.K.

(b) *Radiographers*.—The staffing position was somewhat inadequate owing to the fact that insufficient radiographers could be recruited locally to fill up vacancies, especially for the Thomson Road General Hospital.

Four new post of radiographers were created for the Thomson Road General Hospital, and one for the Kandang Kerbau Hospital, thus making a total of five new appointments for 1965.

The radiographers consisted of: a Superintendent Radiographer, two Senior Radiographers and thirty-one Radiographers (Diagnostic).

School of Radiography

An Adviser/Tutor in Radiography from the United Kingdom for a period of six months was obtained under Colombo Plan Technical Assistance. He was Mr. W. J. Ashworth who arrived in Singapore on 15th May, 1965, when he was accompanied by Mr. K. C. Denley, Secretary, Society of Radiographers. Messrs. Ashworth and Denley had just been to Kuala Lumpur to conduct a *viva voce* examination for Kuala Lumpur pupil radiographers. Mr. Denley spent five days in Singapore at the invitation of the Singapore Government before leaving for the United Kingdom. He visited the School of Radiography and the X-ray Departments of various hospitals.

The W.H.O. decided to withdraw the services of Mr. D. R. E. Ernberg, W.H.O. Lecturer in Radiography, three months earlier than scheduled as Mr. Ernberg would be taking up an assignment in Baghdad, Iraq, by the end of the year.

Mr. Ashworth immediately on arrival started teaching and gave many tutorial sessions on Physics, Radiographic Photography, Equipment for Diagnostic Radiography, to both the 1963 and 1964 Classes of Pupils.

The 1963 batch of pupils were originally scheduled to sit for their Part I, M.S.R., in April. This had to be postponed due to the late arrival of Mr. Ashworth. However, thanks to the efforts of Mr. Ashworth, the Society of Radiographers broke precedent by setting a Part I, M.S.R. Examination specially for the 1963 Class in August, 1965. All nine pupils passed, many with two or three credits on the three subjects taken, and did particularly well in Physics.

The two External Examiners who came from the United Kingdom on 9th November, 1965 to conduct the *viva voce* examination for the 1963 Class were Mr. John Wilson, Vice-President of the Society of Radiographers, and Mr. K. C. Denley. The important suggestion made by them was that the post of Principal, School of Radiography, be a full time one, instead of being held concurrently by the Superintendent Radiographer. Mr. Denley mentioned that provisional recognition had been given to the School, and formal recognition by the Society of Radiographers would come following the visit of the next batch of two External Examiners in November 1966. The question of how further *viva voce* examinations were to be conducted was also discussed, including exchange of examiners between Singapore and Kuala Lumpur.

The 1963 Class of pupils sat for their Part II, M.S.R. examination in November 1965; there were eight passes and one failure.

The 1964 Class of pupils sat for their Part I, M.S.R. examination in November 1965; there were eight passes and one failure.

Ten new Pupil Radiographers were selected and joined the School on 1st November, 1965.

The Director of Messrs. Maclaine Watson (Imports) Ltd. donated a Gevaert-Agfa Shield for the best Pupil Radiographer of the Year from 1965-76. This gift was accepted by the Government. Each best pupil will also receive a replica shield.

Originally, three radiographers had been sent to the United Kingdom on W.H.O. Fellowships to train as Tutor Radiographers. They were Mr. C. F. Reincastle, Mr. Ung Chin Kooi and Mr. K. Vaithilingam. Mr. Ung unfortunately suffered a setback in his health in the United Kingdom and he could not acquire proper training as Tutor Radiographer. The W.H.O. was therefore approached for a Fellowship for a radiographer to train as Tutor Radiographer.

The W.H.O. Assignment Report of Mr. D. R. E. Ernborg was forwarded to the Singapore Government in December 1965. Mr. Ernborg recounted his 28 months assignment in Singapore beginning 23rd April, 1963. The report was an unfortunate one, containing many criticisms, accounts often distorted or without foundation, unwarranted suggestions and claims including training schedules copied in *toto* from the Society of Radiographers and from another training centre in London.

The Board of the School of Radiography met on 15th December, 1965, with Dr. Ho Guan Lim, Deputy Director of Medical Services (Hospitals) presiding. Many matters were discussed, but much of the time was spent on a close analysis of Mr. Ernborg's report.

Cardiovascular Laboratory

The image intensifier broke down soon after the departure of Professor Roy in August 1964. Following an unfortunate series of replacements, the present fourth tube was installed in September 1965, and is working satisfactorily. The laboratory, under the charge of Dr. M. B. Ghosh, carried out 202 cardiac catheterisations in 1965. Both Dr. O. R. McCoy and Dr. F. Connell visited the laboratory in 1965.

X-Ray Equipment, General Hospital

A Kodak X-omat automatic processing film unit was installed on 14th October, 1965.

Casualty 'E' Unit, X-Ray Department, General Hospital

A mobile X-ray unit, protective X-ray screen, film drying cabinet, and linoleum floor sheeting was purchased for the Emergency Unit.

A small X-ray diagnostic unit which was relinquished by the Department of Pædiatrics, Mistri Wing, was accepted by Government and installed for use as a standby machine in March 1965.

T.B. Control Unit

Essential equipment for the processing room was installed and completed for use in June 1965.

X-Ray Department, Thomson Road General Hospital

The X-Ray Department provided only week-day service during office hours for the whole year. No expansion of radiographic service was possible due to lack of radiographic and other essential staff.

New X-Ray Department, Tan Tock Seng Hospital

The premises of the new X-ray Department had been completed by the latter half of 1965. New machines were ordered during the latter part of the year. It is expected that the new equipment will be installed and in working order by the middle of 1966.

*W.H.O. Seminar in Public Health Programmes in Radiation Protection
7-11th December, 1965*

The planning for this Seminar was made under the Chairmanship of Dr. K. Kanagaratnam, D.D.M.S. (Health). The Senior Radiologist and the Radiotherapist were among those in the Committee of Planning.

The Seminar was declared open by Mr. Yong Nyuk Lin, Minister for Health, on 7th December, 1965, at the Pathology Lecture Theatre. Most of the lectures were held in the Lecture Theatre of the Department of Orthopaedics. There were also practical X-ray demonstrations conducted in the Main X-ray Department of the General Hospital, and radioisotope laboratory in the British Military Hospital, Alexandra Road, by the Consultants. Visits were made to some industrial firms and the Singapore Polytechnic. There were also film shows. The Seminar was a great success.

The W.H.O. Consultants were: Dr. R. C. Dobson, Dr. H. G. Parker, Dr. S. B. Osborn, Dr. E. J. Henningsen, Professor H. Blatz, Professor D. Olsson, Dr. P. M. Bird, and Mr. R. A. Borthwick.

Delegates came from Kuala Lumpur, Sabah, Hong Kong, Fiji Islands, Philippines, Taiwan, Japan, Korea, Pakistan and Singapore.

THERAPEUTIC

The total number of cases treated in the General Hospital was 758 for 1965, compared with 815 for 1964, i.e. a decrease of 7 per cent. This could be accounted for by the fact that one of the three deep therapy machines was not functioning the greater part of the year. The number of cases of nasopharyngeal tumours treated was 163 for 1965 compared with 191 for 1964.

There were 202 radium insertions done in Kandang Kerbau Hospital for 1965 as against 214 in 1964 (see Table 139).

TABLE 139

RADIOTHERAPY DEPARTMENT, GENERAL HOSPITAL

SUMMARY OF WORK DONE IN THE RADIOTHERAPY DEPARTMENT IN 1965

<i>Deep X-ray Therapy Malignant Cases</i>				1965	1964 (figures in brackets)
Nasopharyngeal tumours	..	..		163	(191)
Breast	..	..	..	71	(79)
Bronchus	..	..	..	75	(71)
Cervix /Uterus	..	..	..	120	(124)
Ovary /Fallopian tubes	..	..		7	(16)
Vagina	..	..	..	4	(—)
Oesophagus	..	..	..	29	(23)
Mouth: Tongue	..	..	..	10	(18)
Palate	..	..	..	7	(10)
Floor of Mouth	..	..	..	2	(3)
Tonsil	..	..	..	13	(10)
Orbit	..	..	..	1	(1)
Larynx /Pyriform fossa	..	..		32	(32)
Cheek /Buccal Mucosa	..	..		16	(9)
Antrum	..	..	..	13	(16)
Parotid	..	..	..	5	(2)
Thyroid	..	..	..	6	(4)
Nasal fossa	..	..	..	2	(2)
Ethmoid	..	..	..	—	(2)
Leukaemia	..	..	..	6	(6)
Penis	..	..	..	2	(2)
Bladder	..	..	..	3	(2)
Cerebral tumour	..	..	..	5	(10)
Secondary metastases	..	..	..	10	(10)
Sarcoma	..	..	..	19	(9)
Seminoma /Teratoma testis	..	..		8	(5)
Wilm's Tumour	..	..	..	3	(1)
Thymoma	..	..	..	—	(1)
Mediastinal Obstruction	..			12	(1)
Osteogenic Sarcoma	..	..	..	4	(3)
Medulloblastoma	..	..	..	—	(3)
Retinoblastoma	..	..	..	2	(4)
Kidney	..	..	..	3	(1)
Liver	..	..	..	—	(1)
Pancreas	..	..	..	1	(—)
Pituitary Tumour	..	..	..	2	(—)
Rectum /Anus /Colon	..	..		1	(6)
Neuroblastoma	..	..	..	1	(2)
Mastoid /Ear	..	..	..	6	(5)
Reticulosis	..	..	..	27	(21)
Malignant Granuloma	..	..		4	(1)
Eosinophilic Granuloma	..	..		4	(1)
<i>Carried forward</i>				699	708

TABLE 139—continued

<i>Deep X-ray Therapy Malignant Cases</i>				1965	1964 (figures in brackets)
<i>Brought forward</i> ..				699	708
Artificial Menopause (Ca. Breast) ..				4	(5)
Malignant Skin	Rodent Ulcer	..	..	3	(—)
	Squamous Cell Ca.	..	..	4	(13)
	Melanoma	..	..	1	(—)
Miscellaneous	..	..	..	10	(12)
				<hr/> 721	<hr/> (738)
<i>Non-Malignant Cases</i>					
Haemangioma				1	(7)
Ankylosing Spondyliti				—	(5)
Osteoarthritis				—	(1)
Angiofibroma				2	(1)
Exophthalmos from secondary thyrotoxicosis ..				—	(1)
Keloids	..	..	..	—	(2)
				<hr/> 3	<hr/> (17)
<i>Superficial X-ray Therapy</i>					
Keloids	..	..	..	16	(33)
Haemangioma				—	(1)
Rodent Ulcer				8	(6)
Eczema				—	(1)
Chronic Dermatitis				—	(1)
Neurodermatitis				—	(3)
Mooren's Ulcer				4	(2)
Breast Nodule				2	(1)
				<hr/> 30	<hr/> (48)
Radium Cases: Treated in General Hospital ..				4	(12)
<i>Grand Total</i> ..				<hr/> 758	<hr/> (815)
Total Number of Radium Insertion Performed at Kandang Kerbau Hospital, Singapore ..					202

Staff

Dr. Chia Kim Boon, Radiotherapist, returned from his W.H.O. Fellowship in Radiotherapy world tour on 3rd July, 1965. His 8-month trip had been of great benefit to him, as he was able to bring back several fresh ideas and impressions which would be invaluable in the planning of the new Radiotherapy Department.

The Senior Registrar, Dr. Tan Yok Kwang left Singapore for a 6-month W.H.O. Fellowship in Radiotherapy on 18th September, 1965. He first visited Rome to attend the 11th International Congress of Radiology as the representative from Singapore.

The total number of Radiotherapists in the department is three. There is one Physicist, Mr. Tan Kay Choon, who joined Government Service on 17th March, 1965.

New Radiotherapy Centre

Both Government and University authorities have agreed to the setting up of an Institute of Medical Specialities at the site where the new Radiotherapy Centre is to be built. This new building is to be nine storeys tall, and radiotherapy will occupy the ground and lower floors.

The foundation stone for the Institute of Medical Specialities was laid by Dato Lee Kong Chian on 27th November, 1965 in an Opening Ceremony officiated by Mr. Yong Nyuk Lin, Minister of Health.

It would take at least two or three more years for the whole Institute building to be completed. However, in view of the urgent needs of making construction available supervoltage and radioisotope facilities of the ground floor of the Institute is proceeding and is expected to complete.

Publications

(1) *Dr. F. Y. Khoo and Dr. Chia Kim Boon*

A Method of Radiologic Contrast Study for Detection of Cancer of the Naso-Pharynx. Proceedings of the *Second Malayan Congress of Medicine, Singapore* August 28-29th, 1965. Vol. 2, p. 39-40.

(2) *Dr. Donald P. C. Chan and Dr. F. Y. Khoo*

Estimation of Foetal Maturity by Radiology, *Singapore Medical Journal*, Vol. 6, p. 197-199, December, 1965.

(3) Papers on various topics have been submitted by:

- (i) Dr. Chow Khuen Wai
- (ii) Dr. Oon Chong Lin and Dr. Tan Ban Cheng
- (iii) Dr. Yu Sheng Fong
- (iv) Dr. F. Y. Khoo, Dr. Chia Kim Boon and Mr. J. Nalpon.

These are expected to be published in 1966.

Investigations

Dr. Chia Kim Boon and Dr. F. Y. Khoo are still investigating in problems of the nasopharynx.

Dr. Yu Sheng Fong is conducting some investigations in radiography of the renal tract.

Dr. Yeoh Seang Aun and Dr. F. Y. Khoo are investigating into some radiologic aspects of pneumoconiosis in industry.

Chapter Twenty-seven

BLOOD TRANSFUSION SERVICE

GENERAL

A review of the past year showed it to be a very eventful one with a number of changes and improvements made to the Service. The problem which the Service continues to face is the difficulty of obtaining sufficient donors to meet the demand for blood transfusions.

The year started with a mass publicity campaign and exhibition at the Victoria Memorial Hall. Towards the end of the year a sub-centre was set up in Kandang Kerbau Hospital to deal with the requests for blood from patients in the hospital. Plastic blood collection and administration equipment were introduced to replace bottle and rubber tubing administration sets.

Hæmatology out-patient clinics were organised at both the Centre at the General Hospital and at the Kandang Kerbau Maternity Hospital. As a result of reorganisation of the laboratory services in the General Hospital, the various unit hæmatology laboratories and the Central Hæmatological laboratory have now been placed under the charge of the Medical Officer of the Blood Transfusion Service.

A motor bus for 30 passengers and a station wagon for 12 and two blood storage refrigerators were purchased to replace out-dated ones during the year.

Staff

There have been no major change in staff position. The head of the department is Dr. Kwa Soon Bee. The staff consisted of two medical officers and a part-time medical officer. A trainee Medical Officer from the Department has been successful in the Glasgow Membership Examinations. The post of Donor Organiser which fell vacant in May was not filled till December. This resulted in some difficulty in donor organisation and recruitment. The establishment of 11 Medical and Health Servants has been reduced to 6 due to the introduction of plastic equipment.

Donors and Donations Received

During the year a total of 17,813 blood donations were received. This represents an increase of 2.5 per cent over the previous year. The donor panel for 1965 was 12,050 donors, 8,432 or 79.1 per cent of whom made only one donation during the year. The remaining 3,518 or 20.9 per cent made two or more donations during the year. Of the donors on the panel, 5,598 were new donors having been recruited during the year. The high percentage of donors making only one donation during the year in spite of reminders being sent to them is to be noted.

An analysis of the donations received show that a large proportion still come from the British uniformed service (15.8 per cent) and Singapore uniformed service (14.3 per cent). The amount of blood donated by the relative or friend of the patient accounts for only 2,705 donations or 15.1 per cent of all donations received. The prison department contributed 5 per cent and the remaining 50 per cent comes from the ordinary man in the street.

Recipients and Transfusions Given

During the year a total of 17,606 blood transfusions were given. By far the largest proportion of blood is given at the Outram Road General Hospital 62.6 per cent and the Kandang Kerbau Hospital 24.1 per cent.

As in previous years the demand for blood transfusion is always greater than the supply available and there were a number of occasions in which operations have had to be delayed due to the inavailability of blood of certain groups. This led to public appeals for blood being made on Radio and T.V. and in the press on one occasion during the year.

DONATIONS RECEIVED AND TRANSFUSIONS GIVEN — 1961—1965

			<i>Total Donations Received</i>	<i>Percentage increase over Previous Year</i>	<i>Total Transfusion Given</i>	<i>Percentage increase over Previous Year</i>
1961	..	..	13,189	2.4	12,913	2.5
1962	..	..	14,183	7.5	13,775	6.7
1963	..	..	15,649	10.3	14,925	8.3
1964	..	..	17,379	11.06	16,081	7.75
1965	..	..	17,813	2.5	17,606	9.42

ANALYSIS OF DISTRIBUTION TO HOSPITALS

				<i>Transfusions Given</i>	<i>Percentage</i>
General Hospital	..	..	..	11,026	62.63
Kandang Kerbau Maternity Hospital			..	4,251	24.14
Other Government Hospitals	..		..	1,526	8.67
Private Hospitals	..	..	..	803	4.56
				<hr/> 17,606	<hr/> 100

Ethnic Distribution of Donations Received and Transfusions Given

An analysis of the number of donations received and transfusions given by ethnic groups show that the Chinese who were responsible for the use of 13,583 or 77.15 per cent of the transfusions contributed only 6,521 or 36.61 per cent of the blood donations. All other ethnic groups contributed more blood donations than they used. The large proportion provided by the Malays and British is to be noted.

DONATIONS RECEIVED AND TRANSFUSIONS GIVEN BY
RACIAL GROUPS — 1965

			<i>Donations Received</i>	<i>Percentage</i>	<i>Transfusions Given</i>	<i>Percentage</i>
Chinese	..	..	6,521	36.61	13,583	77.15
Malay	..	..	4,407	24.74	2,065	11.73
Indian	..	..	3,711	20.83	1,389	7.89
European	..	..	2,243	12.59	272	1.54
Eurasian	..	..	834	4.68	207	1.18
Others	..	..	97	0.55	90	0.51
			<hr/> 17,813 <hr/>	<hr/> 100 <hr/>	<hr/> 17,606 <hr/>	<hr/> 100 <hr/>

Laboratory Service

The Centre at the General Hospital has continued to provide a 24 hour laboratory service for the supply of blood to all hospitals. During the year a total of 39,909 cross-matchings were performed as compared to 38,549 in 1964. This represents an increase of 3.53 per cent. The number of specialised hæmatological investigations performed during the year numbered 4,425 representing an increase of 60.27 per cent over the previous year.

In October, a sub-centre was set up in Kandang Kerbau Hospital for the cross-matching and supply of blood for patients in the hospital. Up till then all laboratory work for the hospital was carried out at the Centre in the General Hospital, a cumbersome procedure not without risk to the patient. The sub-centre has been functioning well since its opening.

With the opening of the Casualty Admitting Unit in Thomson Road Hospital and the commencement of the Surgical Unit a stock of blood is now kept in Thomson Road Hospital for emergency use. The blood bank is under the charge of the Casualty Unit staff but it is hoped that by 1966 a 24 hour laboratory service manned by technicians from the hospital will be organised.

Hæmatology Out-Patient Clinics

Due to the large number of patients with hæmatological problems being referred to the Unit for investigation and treatment an Out-patient Clinic has had to be organised. This is run on Tuesday mornings at the Centre at the General Hospital. A similar clinic is held at the Kandang Kerbau Maternity Hospital on Thursday afternoons for the care of obstetrical patients with hæmatological problems. During the year over 400 patients were registered and followed-up at these clinics. This represents an additional work load on doctors, nurses and technicians.

Blood Collection and Administration Equipment

Plastic collection and administration equipment were introduced for general use in all hospitals as from September 1965. This replaces the out-dated bottle and red rubber tubing apparatus that had been used since the Service began in 1947.

Up till September, the number of saline and blood administration sets assembled and distributed by the Service was 18,326 and 26,299 respectively.

Since September, the number of plastic administration sets issued by the Service numbered 13,348.

Blood Fractions

With the introduction of plastic equipment, the separation of blood into various components i.e. concentrated red cells, plasma, platelet has been made possible and component therapy is now being used with increasing frequency. This represents a tremendous advance in that the patient is given only that component in which he lacks and further more it represents a most economical use of 1 unit of blood provided by 1 donor which can now be used for a number of patients without risk of contamination.

Research Projects

The unit has continued its active interest in carrying out research with its limited professional and technical staff and funds available. The sum of \$2,400 was made available from the Ministry of Health Research Grant for research into the anæmias of pregnancy.

The three year prospective study into the serum iron values of donors has been completed and the figures are being analysed.

A study of all cases of hæmophilia seen in Singapore resulted in a total of 33 cases being documented and a paper in conjunction with the pædiatric unit is being prepared.

Publicity

An intensive publicity drive was started at the beginning of the year. This included a poster design competition, a 5 day "Gift of Life" Exhibition at the Victoria Memorial Hall in which all aspects of the work of the Singapore Blood Transfusion Service was exhibited. Apart from some assistance from the Department of Clinical Medicine, Cardiovascular laboratory and Health Education Department, the whole exhibition was organised and put up by the Blood Transfusion Service at the cost of less than \$2,000. The exhibition was a success and an estimated 20,000 members of the public visited the exhibition.

A scheme of privileges for Regular Blood Donors was announced by the Minister. It was hoped that this scheme would be an incentive to members of the public to enrol as regular blood donors. However, the Scheme was not entirely a success as it resulted in an increase of only 2.5 per cent of donations received over the previous year.

Full use was made of Radio and T.V. and a number of radio and T.V. interviews and news items on Blood Transfusion and blood donation were recorded during the year. Repeated advertisement announcements in 4 languages were made during the year on both Radio and T.V.

Advertisement slides were also prepared and shown at all major cinema theatres during the year.

Funds were made available for the production of 4 one minute colour films for advertisement in cinemas and T.V. The films have been produced and will be used for a publicity campaign in 1966.

Winning posters from the Design Competition have been printed and will also be used for the publicity drive in 1966. A 15 minute black and white documentary film on blood transfusion has been produced for public lectures and publicity campaigns.

AMBULANCE SERVICES

The following is a record of the Ambulance Services. (Table 140).

Full potential of the Hospitals Ambulances are not to be utilised because of a lack of sufficient number of Ambulance Drivers to put all the vehicles on the road on a 24-hour basis. Further, the Ambulances are not used efficiently as they are not equipped with 2-way radio communication.

TABLE 140
HOSPITAL AMBULANCE SERVICES

<i>Hospital</i>	<i>Ambulance Services</i>				
	<i>No. of Ambulances</i>	<i>No. of Calls Answered</i>	<i>Patients Carried</i>	<i>Total Mileage</i>	<i>Average No. of Miles Per Patient</i>
Outram Road General Hospital ..	7	6,097	5,887	83,834	14
Thomson Road General Hospital ..	3	16	3,766	32,287	8.6
Kandang Kerbau Hospital (Maternity Hospital)	6	1,086	1,026	7,162	7
Tan Tock Seng Hospital (Tuberculosis Hospital)	3	9	9	106	11.77
Middleton Hospital (Infectious Diseases Hospital)	2	1,920	1,854	29,862	16.1
Trafalgar Home (Leprosy Hospital)	3	—	—	—	—
Woodbridge Hospital (Mental Hospital)	2	—	4,850	36,790	7.6
St. Andrew's Orthopaedic Hospital	—	—	—	—	—

ANCILLARY SERVICES

The following is a summary of the work on the ancillary services.

TABLE 141
ANCILLARY SERVICES: ATTENDANCES AND COURSES OF TREATMENT

<i>Hospital</i>	<i>X-ray Examination</i>	<i>Radio-therapy</i>	<i>Physio-therapy</i>	<i>Occupational Therapy</i>
Outram Road General Hospital ..	82,807	38,901	104,286	26,126
Thomson Road General Hospital ..	9,879	—	12,381	10,671
Kandang Kerbau Hospital ..	7,989	—	5,782	120
Tan Tock Seng Hospital ..	83,749	—	21,018	17,402
Middleton Hospital	—	—	4,270	—
Trafalgar Home	—	—	8,685	29,315
Woodbridge Hospital	3,755	—	—	67,879
Chronic Sick	—	—	4,800	7,865
St. Andrew's Orthopaedic Hospital ..	—	—	4,339	3,363

Chapter Twenty-eight

DENTAL HEALTH BRANCH

GOVERNMENT dental services were maintained fully during 1965 with further development of the School Dental Service. The staffing position was excellent throughout the year and practically all the posts were filled. The Dental Branch had an establishment of 308 officers including 60 fully-qualified dental surgeons, 85 school dental nurses, 26 dental technicians and 57 dental (chairside) assistants. There were 59 dental clinics functioning by the end of 1965, with the establishment of eight new school dental clinics. The annual returns of work done in these clinics reached a record level. All types of dental treatment, both specialist and ordinary, were provided to various sections of the public, either at nominal cost or free of charge. Primary school-children were given the highest priority for dental attention. The total number of patient-attendances was 360,919 for all clinics, and the dental work done included 107,876 permanent dental fillings and 234,828 dental extractions. A total of 6,888 artificial dentures were issued to patients, including 2,150 full dentures.

Schools Division

The School Dental Service was developed further with the long-term objective of providing effective dental care for all Singapore school-children. Eight new dental clinics were established during the year bringing the total number of school dental clinics to 42, including two large school dental centres. About the end of 1965, six more new dental clinics were ready and were being installed with dental equipment and fittings. These would be opened in the early part of 1966. Steady expansion of the service was essential to meet the dental needs of the growing school population, which at the beginning of 1965 reached a total of 482,000, including 365,000 primary school-children.

The Dental Branch devoted about over half of its resources to the School Dental Service and 34 Dental Officers were fully engaged in running this service and training ancillary dental staff (School Dental Nurses) for this service. There were 85 Dental Nurses/Student Dental Nurses on the establishment. Dental nurses worked under the supervision of Dental Officers and were found to be effective in providing routine conservative dental treatment to primary school-children. The system whereby a number of dental nurses worked under the close supervision of a Dental Officer continued to be

developed carefully during the year and was found to be satisfactory. The success of this scheme was reflected in the returns of work for 1965, as there was a remarkable increase of work done compared with the previous year. The figures were as follows:

		1964	1965	Increase
Total patient-attendances	..	151,112	196,503	30%
No. of permanent dental fillings	..	69,934	94,586	35%
No. of dental extractions	..	98,574	120,703	22%

In the School Dental Service the ideal of giving complete systematic treatment to school-children was followed as much as was possible and during the year 14,982 patients had full treatment completed.

Hospitals Division

There were five dental clinics in the hospitals division providing dental attention to hospital-patients and outpatients. A large dental clinic located at the General Hospital, Sepoy Lines also served as the training hospital for the Dental School of the University; and small clinics were sited at the Tan Tock Seng Hospital, Woodbridge Hospital, Trafalgar Home and the Thomson Road General Hospital. The new dental clinic at Thomson Road General Hospital started functioning in March 1965. Another new clinic was being completed towards the end of the year at Tan Tock Seng Hospital and this modern air-conditioned clinic would be replacing the old clinic in the beginning of 1966.

The dental clinic at the Sepoy Lines General Hospital continued to provide treatment to a large number of ward-patients and outpatients. The Head of the Department of Dentistry, Medical Faculty, University of Singapore was in-charge of this clinic, with a government dental specialist acting as Deputy. He had under him government dental staff as well as university dental personnel, all working as one unit. The unit provided a wide range of dental treatment to a very large number of patients daily. During 1965 patient-attendance at these clinics increased slightly, the total number of patient-attendances being 120,991. The work done included 72,253 dental extractions, 9,187 dental fillings and other restorations, and the construction and fitting of 4,075 artificial dentures, including 1,048 full dentures.

The chronic sick in the Tan Tock Seng Hospital, Woodbridge Hospital and Trafalgar Home were given dental attention by a Dental Officer at a dental clinic located in each of these institutions. The new clinic at Thomson Road General Hospital provided dental care mainly to inpatients of that hospital. Inmates of the St. Andrew's Orthopaedic Hospital and the Red Cross Home for crippled children continued to receive dental attention from a mobile dental clinic which visited these two institutions regularly.

The total number of patient-attendances in the hospitals division was about 128,000 for the year.

Maternal and Child Health Division

This division comprised seven dental clinics which provided dental attention to pregnant and nursing mothers and their toddlers referred by doctors working in various Maternal and Child Health Clinics on the island. There was a dental clinic located in each of the following centres:

Prinsep Street Maternal and Child Health Centre;
Bukit Timah Maternal and Child Health Centre;
Ama Keng Maternal and Child Health Centre;
Mandai Maternal and Child Health Centre;
Yio Chu Kang Maternal and Child Health Centre;
Kampong Batak Maternal and Child Health Centre; and
Buona Vista Maternal and Child Health Centre.

Dental Officers at these clinics provide dental treatment to patients free of charge in the same way that medical services were being provided free to mothers and infants at Maternal and Child Health Centres. During the year the work done by this division was maintained satisfactorily and the total of patient-attendances at these clinics was 24,409. The number of permanent dental fillings done was 3,129 and 21,606 teeth were extracted. The number of artificial dentures issued was 1,583.

Miscellaneous Dental Services

One Dental Officer of the Dental Branch provided dental attention to the police rank and file in a dental clinic at the Central Police Station. He also visited Outram and Changi jails regularly to attend to prisoners and detainees who had dental complaints.

Inmates of the Blind School, Boys' Town, Cheshire Home, the Spastic Children's Association Centre and Lee Kuo Chuan Nursery continued to receive dental attention from a mobile dental clinic. Another mobile clinic regularly attended to inmates at Gimson School, Mt. Emily Girls' Home and Girls' Home-Craft Centre.

Young children attending various children's centres in Singapore were provided with dental care at two clinics, one located in Geylang Community Centre and the other in the Siglap Community Centre. In such services the Dental Department worked in close conjunction with the Social Welfare Department.

Preventive Dentistry

The fluoridation of the municipal water supply of Singapore was well maintained in its eighth year. This public health measure to control the incidence of dental caries among the young population was instituted in January, 1958 and the Singapore fluoridation scheme was the first major one to be carried out in tropical countries. A dental survey was being carried

out yearly in order to assess the efficacy of this public health measure in the reduction of dental decay, and the results so far recorded have been satisfactory. A report on these surveys would be drawn up shortly.

The Dental Services put up a striking exhibition showing the training of dentists, school dental nurses, dental technicians and dental assistants during September last year in conjunction with the Careers and Hobbies Exhibition organised by the Singapore Vocational Guidance Steering Committee at the Victoria Memorial Hall. During the year several Dental Health Exhibitions were also held in connection with the official openings of a number of new primary schools. Each of these schools had its own dental clinic. Such exhibitions were well attended and they helped to propagate dental health knowledge among school-children and their parents.

Training of Staff

During 1965 the Dental Nurses' Training School at the Institute of Health had 45 students but three dropped out of the course towards the end of the year for various reasons. One batch of 21 student dental nurses graduated from the school in May, followed by an intake of 22 new trainees in June. There were among the new trainees two girls sent by the Sarawak Government and four girls by the Sabah Government.

One group of seven probationer dental technicians completed their second year of training in the department and commenced their final year of the departmental training course for dental technicians. They were undergoing training at the Government Dental Laboratory at the Institute of Health.

Two small groups of student dental assistants were undergoing "in-service" training in the department during the year.

During 1965 one Dental Officer, Mr. Wong Hee Deong returned from the United Kingdom after obtaining the Diploma in Public Dentistry at the University of St. Andrews, and he resumed his duties as Principal of the Dental Nurses' Training School. Another Dental Officer, Mr. Chee See Kong left for the United Kingdom on a Departmental Training Course to take up higher studies leading to the Fellowship in Dental Surgery, Royal College of Surgeons (England). About the same time another Dental Officer, Mr. Ng Kheng Lim left Singapore for London on two years' no-pay study leave to take up a course leading to the Diploma in Orthodontics, Royal College of Surgeons (England). One Dental Officer, Mr. Tan Kwang Jow proceeded to Copenhagen, Denmark, on a W.H.O. Fellowship to take up a three-month training course in Child Dental Health at the Royal Dental College and returned in July to resume his duties at the School Dental Clinic, Institute of Health.

Towards the end of the year two Dental Sisters, Mrs. Lim Keng Tong and Mrs. Leong Sum Cheok were awarded Colombo Plan Fellowships to enable them to take up a Tutor Sister's Course in dental nursing in New Zealand. They were due to leave for New Zealand just after the new year.

Dental Board

There were 342 dentists registered with the Dental Board in Singapore at the end of 1965. Of this number 125 were fully-qualified dental surgeons registered in Division I of the Register and 217 were non-graduate dentists registered in Division II. Of the qualified dentists, 59 were in Government Service, 16 were University teaching staff and the rest in private practice. All Division II dentists were private practitioners. There was an increase of 10 qualified dentists in the Dental Register by the end of the year.

The Inspecting Officer, Dental Board carried out routine inspections on the dental premises of Division II dentists, and reports of any unsatisfactory conditions of dental practice were followed up by the sending of warning notices to the dentists concerned. During 1965 successful prosecutions were made against three registered dentists who allowed their dental technicians to carry out unlicensed dental practice in their premises. All the three dentists were convicted and fined, and the Dental Board subsequently removed their names from the Register. The three persons who practised dentistry without registration were also convicted and fined.

Annual Returns of Work in Government Dental Clinics

A table showing the annual returns of work in respect of all Government Dental Clinics, 1965 is attached as Appendix A.

The annual report of the Head of the Dental Clinic, General Hospital, is also attached as Appendix B.

TABLE 142

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1965

Clinic

HOSPITALS AND RELATED SERVICES 1965

239

	PATIENTS SEEN				TREATMENT GIVEN										PA- TIENTS					
	NEW CASES				Total attendances	Re-examined	Refusing treatment	Requiring treatment	Examined	FILLINGS			EXTRACTIONS			Scalings (per visit)	Dressings (per visit)	DENTURES INSERTED		Other treatment
	Examined	Requiring treatment	Refusing treatment	Total attendances						Silver Amalgam	Silicate	Other	Deciduous teeth	Perma nent teeth						
Schools Division																				
School Dental Centre, Pegu Road	4,406	4,406	67	437	27,008	14,356	1,043	3,508	8,537	3,934	2,602	2,162	120	..	3,154	1,085				
School Dental Clinic, Institute of Health	14,301	14,136	158	159	34,156	3,965	954	3,720	21,436	12,932	300	971	228	1	995	470				
Dental Nurses' Training School	824	824	—	1,044	15,571	7,355	306	6,007	1,683	102	3,035	..	..	..	1,577	1,610			
Telok Ayer Primary School Dental Clinic	479	479	21	..	1,923	622	54	152	1,316	313	358	46	16	..	37	356				
Bukit Panjang O.P.D. Dental Clinic (for children only)	4,352	4,352	21	63	9,627	1,022	430	921	5,935	4,579	154	185	77	17	512	218				
Bukit Panjang English Primary School Dental Clinic	288	288	16	..	327	436	..	71	210	10	9	..	..	..	6	3			
Dunearn School Dental Clinic	619	619	10	27	2,674	2,318	63	190	1,512	229	54	8	..	..	64	47			
Geylang Community Centre Dental Clinic	529	529	..	28	2,172	1,221	140	651	1,828	217	163	..	17	..	69	342				
Bedok Boys' School Dental Clinic	268	268	..	108	2,162	1,920	194	550	1,110	209	426	..	7	..	50	469				
Siglap Community Centre Dental Clinic	696	685	..	33	1,642	681	42	633	2,273	308	90	..	1	..	13	92				
Aroozoo Avenue Primary School Dental Clinic	346	333	42	29	1,336	866	57	411	1,755	105	189	..	6	..	21	230				
Carried forward ..	27,108	26,919	335	1,928	98,598	34,762	3,283	16,814	47,595	22,938	7,380	3,372	472	18	6,498	4,922				

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1965

Clinic

HOSPITALS AND RELATED SERVICES 1965

	PATIENTS SEEN				TREATMENT GIVEN										PA- TIENTS	
	NEW CASES				Total attendances	FILLINGS			EXTRACTIONS		Scalings (per visit)	Dressings (per visit)	DENTURES INSERTED			Other treatment
	Examined	Requiring treatment	Refusing treatment	Re-examined		Silver Amalgam	Silicate	Other	Deciduous teeth	Permanent teeth						
<i>Schools Division</i>																
<i>Brought forward ..</i>	27,108	26,919	335	1,928	98,598	34,762	3,283	16,814	47,595	22,938	7,380	3,372	472	18	6,498	4,922
Labrador School Dental Clinic ..	445	435	6	177	2,852	1,355	152	310	1,385	198	56	..	31	..	53	431
Pulau Bukom School Dental Clinic ..	135	132	..	19	839	432	52	109	338	126	42	..	2	..	9	159
Pulau Sudong School Dental Clinic ..	16	16	..	2	165	78	1	12	89	66	7	..	..	..	..	38
Tanjong Katong Girls' School Dental Clinic ..	865	865	..	469	6,440	3,669	474	1,781	2,026	445	871	87	80	1	358	605
Bartley Primary School Dental Clinic ..	696	693	11	21	4,251	3,389	120	905	2,093	283	747	..	..	..	281	258
Guillemard School Dental Clinic ..	584	580	18	..	1,902	697	36	282	1,038	449	47	1	..	..	61	176
Kaki Bukit School Dental Clinic ..	1,625	1,625	..	1,676	3,301	1,520	208	717	2,266	552	362	45	18	..	10	155
Mattar (East) School Dental Clinic ..	2,187	2,090	..	1,328	3,414	1,377	258	716	2,453	503	521	20	13	..	14	282
Selegie Integrated School Dental Clinic ..	483	483	8	221	5,356	4,587	37	650	2,103	132	760	52	8	..	787	501
Hua Yi School Dental Clinic	272	272	43	10	1,594	921	15	191	592	67	190	1	..	..	248	128
<i>Carried forward ..</i>	34,416	34,110	421	5,851	128,712	52,787	4,636	22,487	61,978	25,759	10,983	3,578	624	19	8,319	7,655

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1965

Clinic

	PATIENTS SEEN				TREATMENT GIVEN										PA-TIENTS						
	NEW CASES			Total attendances	FILLINGS			EXTRACTIONS		Scalings (per visit)	Dressings (per visit)	DENTURES INSERTED		Other treatment							
	Examined	Requiring treatment	Refusing treatment		Re-examined	Silver Amalgam	Silicate	Other	Deciduous teeth			Permanent teeth									
<i>Schools Division</i>																					
<i>Brought forward</i> ..	34,416	34,110	421	5,851	128,712	52,787	4,636	22,487	61,978	25,759	10,983	3,578	624	19	8,319	7,655					
Cambridge Primary School Dental Clinic ..	146	144	17	121	1,369	1,215	26	138	679	66	50	1	..	..	18	154					
Pearl's Hill School Dental Clinic ..	256	240	11	614	3,281	1,638	152	486	402	128	758	..	..	..	39	651					
Balestier Hill (East) School Dental Clinic ..	803	747	54	310	3,359	1,648	29	105	1,973	259	87	17	6	1	25	297					
Balestier Hill (West) School Dental Clinic ..	280	280	..	..	1,820	684	3	27	358	16	216	755	..	..	6	14					
Kim Keat School Dental Clinic ..	472	472	23	10	1,329	636	12	24	986	115	3	14	..	..	10	99					
Newton Boys' School Dental Clinic ..	238	225	15	1,190	4,320	1,959	35	598	876	154	617	..	9	..	223	914					
Bukit Tunggal Malay Girls' School Dental Clinic ..	14	14	..	91	1,855	985	16	124	695	22	391	..	..	..	572	319					
Anthony Road Girls' School Dental Clinic ..	153	153	..	1,748	3,555	941	65	348	902	39	829	..	..	..	11	325					
Alexandra Hill School Dental Clinic ..	703	703	99	1,242	1,944	314	3	405	1,070	102	10	5	..	..	2	7					
Kim Seng School Dental Clinic ..	250	250	14	203	2,157	1,342	3	391	899	54	266	..	..	..	170	132					
River Valley English School Dental Clinic ..	566	559	62	2,770	4,991	2,221	82	1,169	1,420	179	409	4	..	..	307	221					
<i>Carried forward</i> ..	38,297	37,897	716	14,150	158,692	66,370	5,062	26,302	72,238	26,893	14,619	4,374	639	20	9,702	10,788					

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1965

Clinic

	PATIENTS SEEN				TREATMENT GIVEN										PA- TIENTS	
	NEW CASES				Total attendances	FILLINGS			EXTRACTIONS		Scalings (per visit)	Dressings (per visit)	DENTURES INSERTED			Other treatment
	Examined	Requiring treatment	Refusing treatment	Re-examined		Silver Amalgam	Silicate	Other	Deciduous teeth	Permanent teeth			Partial	Full		
<i>Schools Division</i>																
<i>Brought forward ..</i>	38,297	37,897	716	14,150	158,692	66,370	5,062	26,302	72,238	26,893	14,619	4,374	639	20	9,702	10,788
Bukit Ho Swee (East) School Dental Clinic ..	637	616	21	11	2,297	866	28	323	884	279	27	4	1	2	103	167
Bukit Ho Swee (West) School Dental Clinic ..	290	290	2	129	3,161	2,701	..	151	1,223	..	550	837	..	..	172	123
Belvedere School Dental Clinic ..	420	419	1	148	3,176	2,897	..	1,019	1,245	..	792	..	..	..	321	249
Balestier Mixed School Dental Clinic ..	852	849	10	2	4,411	2,286	101	1,278	1,927	288	256	29	19	..	181	201
Joo Avenue School Dental Clinic ..	371	368	5	1,066	5,474	2,639	198	584	1,416	229	523	11	..	..	787	979
Telok Kurau (West) School Dental Clinic ..	756	741	29	1,371	2,133	1,235	5	128	2,057	113	261	24	..	..	82	329
Tanjong Rhu School Dental Clinic ..	335	335	7	2,456	2,791	2,618	20	519	1,889	50	509	23	..	..	253	264
Jalan Kembangan School Dental Clinic ..	590	590	..	2,871	3,461	2,952	19	1,701	1,837	73	912	352	..	..	791	932
Mobile Dental Clinic No. I	968	942	15	40	4,165	732	37	907	2,670	381	322	1	18	..	117	394
Mobile Dental Clinic No. II	826	746	21	73	3,202	2,676	33	340	2,108	233	419	..	..	..	57	484
Mobile Dental Clinic No. III	1,512	1,512	..	2,028	3,540	923	188	691	2,165	505	431	34	6	..	195	72
<i>Carried forward ..</i>	45,854	45,305	827	24,345	196,503	88,895	5,691	33,943	91,659	29,044	19,531	5,689	683	22	12,761	14,982

DENTAL SERVICES, SINGAPORE

RETURN OF WORK

Period Covered 1965

Clinic

HOSPITALS AND RELATED SERVICES 1965

243

	PATIENTS SEEN				TREATMENT GIVEN								PA-TIENTS			
	NEW CASES			Total attendances	FILLINGS			EXTRACTIONS		Scalings (per visit)	Dressings (per visit)	DENTURES INSERTED		Other treatment		
	Examined	Requiring treatment	Refusing treatment		Re-examined	Silver Amalgam	Silicate	Other	Deciduous teeth			Permanent teeth				
	45,854	45,305	827	24,345	196,503	88,895	5,691	33,943	91,659	29,044	19,531	5,689	683	22	12,761	14,982
M. and C. H. C. Division																
Brought forward ..																
Ama Keng Maternal and Child Health Centre ..	402	402	..	898	1,300	36	6	13	728	938	15	11	..	..	..	..
Bukit Timah Maternal and Child Health Centre ..	1,243	1,243	..	4,678	5,921	767	204	113	1,910	3,035	142	116	215	318	1,016	290
Mandai Maternal and Child Health Centre Dental Clinic ..	863	863	..	2,370	3,233	212	4	162	1,566	1,447	33	30	95	178	713	292
Yio Chu Kang Maternal and Child Health Centre Dental Clinic ..	637	637	..	1,232	1,869	138	16	82	1,129	1,396	7	12	..	..	4	71
Buona Vista Maternal and Child Health Centre ..	432	432	59	1,332	1,764	53	26	90	935	869	11	10	64	74	342	117
Jalan Eunus Maternal and Child Health Centre ..	1,295	1,295	4	5	6,026	365	30	227	2,143	3,149	131	232	134	159	638	152
Prins-ep Street Maternal and Child Health Centre ..	743	743	..	3,553	4,296	945	327	259	..	2,361	205	7	242	104	876	198
Carried forward ..	51,469	50,920	890	38,413	220,912	91,411	6,304	34,889	100,070	42,239	20,075	6,107	1,433	855	16,350	16,102

DENTAL CLINIC, GENERAL HOSPITAL, SEPOY LINES, SINGAPORE 3

Head: Dr. Lee Ek Chong

The Dental Clinic functions as a teaching school, an outpatient clinic for adults and children and a specialist unit.

ESTABLISHMENT: Total = 101

GOVERNMENT

UNIVERSITY

Professional:

Prosthodontist (Senior Dental Officer)	..	..	1
Ag. Senior Dental Surgeon	..	..	1
Dental Officers	..	..	3
Dental Housemen	..	..	6
			—— 11

Professional:

Professors	..	..	3
Senior Lecturers	..	..	3
Lecturers	..	..	8
Asst. Lecturers	..	..	1
Teaching Assistants	..	..	2
			—— 17

Ancillary:

Sister	..	..	..	1
Staff Nurse	..	..	..	1
Dental Assistant (Special Grade)				1
Dental Assistants	..	..	..	17
Dental Technician (Special Grade)	..	..	..	1
Dental Technicians			..	7
Medical and Health Servants	..	..	..	17
				—— 45

Ancillary:

Senior Laboratory Technician	..	..	1
Laboratory Technicians	..	..	7
Dental Technicians	..	..	5
X-ray Technician	..	..	1
Laboratory Servants	..	..	6
			—— 20

Others:

Storekeeper	..	..	..	1
Clerks	..	..	..	4
				—— 5
				——
				61
				——

Others:

Secretaries	..	..	..	2
Clerk	..	..	..	1
				—— 3
				——
				40
				——

Staff Matters

Dr. Lee Ek Chong was appointed Head of Department in February. Drs. Lim Kheng Ann and Chua Sui Yeow were appointed Prosthodontist and Ag. Senior Dental Surgeon respectively. Dr. Lee Khee Wee proceeded to the Eastman Dental Hospital, London, as Senior Lecturer on two years' secondment. Dr. Lee Swee Khiang returned with a Master's degree in Orthodontia after two years' study at the Northwestern University, U.S.A. Drs. Chee See Kong, Loke Sau Jun and Lye Thim Loke proceeded to U.K., on study leave. Dr. Chan Ying Fatt resigned from the University and Dr. Yip Wing Kong was appointed as Assistant Lecturer.

Treatments

Table 142 gives the comparative figures since 1951.

With the exception of Oral Surgery operations, there is an all-round increase in the total number of new cases, outpatient attendances and various forms of treatment given. This Year's return includes periodontal treatment which has increased significantly to merit separate mention.

The increase in treatments for 1965 has been achieved in spite of shortage of space facilities, particularly in the Oral Surgery Section. Because priority has to be given to teaching, facilities for Government and University staff do service in the Conservative Dentistry Section were often inadequate. With increase in the number of clinical students in 1966, the position will become worse. Plans have been submitted in April to both University and Government for an urgent expansion of teaching and service facilities. As a result, an extension to the Clinic to house a service polyclinic and an operating theatre suite has been tentatively approved by Government. This, when completed, will contribute to increased and more efficient service. It is envisaged that with this extension and new facilities contained therein, it should be possible to develop the Dental Service in the Hospital to a stage where there will be two Dental Units, one University and one Government, functioning side by side in the closest liaison.

On the University side, efforts are being made to obtain Faculty status for the Dental School.

Administration

The internal administration of the Dental Clinic was reorganised in 1965 to give Government more control over its section. The Senior Dental Officer was delegated direct administrative control over Government professional and technical staff and the responsibility of smooth and efficient running of the Government section of the outpatients service. This has resulted in an appreciable improvement in service to the public and in the relationship between Government and University in the Dental Clinic.

The Dental Clinic store likewise was reorganised whereby the control now is in the hands of the "officer in charge of stores" directly responsible to the Assistant Director of Medical Services (Dental).

Revenue

This has increased by \$6,911.75 from \$40,544 to \$46,455.75.

Research

The following research work was carried out in the Dental Clinic.

1. A study on the use of Corticoid-antibiotic preparations in the treatment of pulpal inflammation and pulpal exposures. Clinical results in 70 cases have been encouraging and served to confirm report by other workers.
2. A study has been carried out in a conservative method of treatment of osteomyelitis of the mandible in children. The method of treatment consisted of a prolonged course of antibiotic therapy. The results obtained so far have been very promising.
3. Studies on the tuberculated premolar and its treatment have now been completed and results are being assessed for publication.
4. A Clinical and radiological study of the causes of failure in amalgam restorations has been carried out.
5. Use of Chymoral in the surgical removal of impacted mandibular third molars.

TABLE 143

Year	Total New Cases	Total Out- patients Attendan- ces	Daily Average	Extrac- tions	Oral Surgery Opera- tions	Dressings	Periodon- tia	Fillings	Dentures	X-rays	Revenue \$ c.	
1951	..	7,149	29,168	106.06	22,973	—	12,556	—	3,490	1,457	3,571	29,125 65
1952	..	10,054	37,988	138.11	27,933	—	10,223	—	5,913	1,223	4,498	31,126 67
1953	..	14,444	50,449	183.42	51,972	—	31,604	—	6,006	1,726	6,298	44,535 59
1954	..	21,525	63,469	231.20	71,715	—	44,641	—	6,859	2,092	6,596	53,842 84
1955	..	27,895	82,107	278.74	83,392	847	52,201	—	6,039	1,873	6,761	34,738 85
1956	..	32,547	99,004	334.47	82,175	898	63,338	—	6,741	2,348	9,137	36,341 94
1957	..	36,508	107,700	362.05	67,785	646	64,018	—	9,048	2,304	10,683	32,068 65
1958	..	25,770	87,293	291.03	53,701	755	23,315	—	5,277	2,025	15,498	21,954 50
1959	..	33,958	101,754	340.1	61,826	887	20,314	—	7,660	1,638	16,610	22,368 10
1960	..	42,948	112,211	375.87	83,259	978	18,855	—	7,165	1,809	17,696	25,077 25
1961	..	39,242	110,687	370.66	56,062	1,131	16,787	—	10,875	2,247	13,103	29,849 75
1962	..	40,082	115,838	390.03	59,144	1,438	24,982	—	7,251	2,941	14,205	35,034 10
1963	..	38,726	128,200	429.46	56,234	1,770	27,198	—	7,738	3,105	13,861	39,305 00
1964	..	33,194	113,850	379.64	39,252	1,727	25,184	—	7,979	3,471	15,677	40,544 00
1965	..	34,151	120,991	404.08	48,045	1,533	26,850	2,603	9,187	4,075	21,594	46,455 75

Chapter Twenty-nine

TUBERCULOSIS CONTROL UNIT

THIS REPORT reflects the activities of the Tuberculosis Control Unit for the year ended 31st December, 1965 and as in the previous year, is arranged in sections dealing with:—

- I Staff and Administration.
- II Legislation.
- III Central Tuberculosis Registry.
- IV Central Culture Laboratory.
- V Mass and Group X-Ray Surveys.
- VI Tuberculin Testing and B.C.G. Vaccination.
- VII Contact Examination.
- VIII School Tuberculosis Service.
- IX Statistics and Records.

I STAFF

Except for the period 1st October, 1965 to 18th December, 1965 during which Dr. Wong Hin Sun was the Acting Deputy Director of Medical Services (Hospitals). Dr. Wong remained the Assistant Director of Medical Services (Tuberculosis) throughout the year. Dr. Yeoh Seang Aun, Senior Chest Physician of Tan Tock Seng Hospital, officiated as Assistant Director of Medical Services (Tuberculosis) during the aforesaid period. Mr. Wong Fook Thim, Registrar, Tuberculosis Registry on his being awarded a World Health Organisation Fellowship for the study of tuberculosis statistics and the maintenance of central tuberculosis registers in various countries, left Singapore on 16th October, 1965. His Fellowship was of an approximate 6 months' duration and in his absence Mr. Chan Foon Chee was appointed as the Acting Higher Executive Officer. At the end of the year, the composition of the staff was as follows:

- Assistant Director of Medical Services (Tuberculosis).
- 4 Medical Officers (3 of whom are Contract Officers seconded from the Hospitals Divisions)
- Higher Executive Officer (Registrar Tuberculosis Registry)
- Bacteriology Officer.
- 3 Radiographers.
- 5 Laboratory Technicians.
- 2 Laboratory Technicians-in-Training.
- 2 Sisters.
- 15 Staff Nurses.
- 2 General Clerical Officers.
- Clerical Officer (Interpreter).
- 11 Clerical Assistants.
- Senior Assistant Nurse.
- 22 Assistant Nurses.
- Typist
- 6 Junior Photographic Assistants.
- 5 Laboratory Attendants.
- 10 Drivers, General Purpose.
- 4 Medical and Health Servants.
- 2 Office Boys.

Administration

The Tuberculosis Control Unit serving as the centre of all activities against tuberculosis continued the following functions:

- (a) The maintenance of a Central Tuberculosis Registry which is the centre for correct, complete and current information on all notified tuberculosis cases.
- (b) The maintenance of a Central Tuberculosis Laboratory for the examination and culture of various materials for Tubercle Bacilli Tests and other aspects of Tuberculosis Bacteriology.
- (c) The maintenance of a Diagnostic Clinic for the follow-up of cases recalled from X-Ray Surveys, the periodical check-up of cases initially diagnosed as "Scars" and the assessment of cases not yet proven as active.
- (d) The maintenance of a Contact Clinic for the follow-up and examination, including home-visits and clinic attendances, of all contacts of known cases.
- (e) To direct and supervise the National B.C.G. campaign.
- (f) To provide the School Tuberculosis Service.
- (g) To Conduct Mass and Group X-Ray Surveys.
- (h) To teach and train personnel in all aspects of Tuberculosis Control, such as home visitors, Laboratory Technicians and Staff Nurses on the Public Health Nursing Course.
- (i) To formulate plans for the effective control of Tuberculosis.

General

After 5 years of implementation of the island wide anti-tuberculosis programme there was a definite drop in the various indices related to the problem.

Although of limited use as an epidemiological index the Death Rate due to Tuberculosis continued to fall rapidly during the last decade. The notification rate, and tuberculin rate amongst primary school children have dropped slowly but surely. These early signs that the tuberculosis problem is beginning to respond to the control measures are very encouraging.

The recognition of the work done here, was shown by the fact that Singapore was chosen to be host to the World Health Organisation First Regional Tuberculosis training course next year from 14th February — 30th April, 1966. Tentatively there would be twelve participants comprising of Senior Medical Officers with at least 5 years experience in Tuberculosis work. They were to be invited from various countries in the Western Pacific Region of W.H.O. i.e. Cooksland, Japan, Korea, Malaysia (Sabah), Philippines, Ryukyu Islands and Taiwan. Singapore would be represented in this training course by one participant (Dr. Ng Yook Kim) and two observers (Dr. Thambyah and Dr. Doraisingham). Dr. Wong Hin Sun, Assistant Director of Medical Services (Tuberculosis) was appointed Course Director.

II LEGISLATION

No new legislation was introduced during the year.

III CENTRAL TUBERCULOSIS REGISTRY

The number of tuberculosis notifications registered was 4,711. Table 144 shows the number of notifications received for the year by month. For comparison, figures over the last 5 years are also given

TABLE 144

NUMBER OF NOTIFICATIONS REGISTERED IN 1960, 1961, 1962
1963, 1964 AND 1965 BY MONTHS

			<i>Number Registered</i>					
<i>Month</i>			<i>1960</i>	<i>1961</i>	<i>1962</i>	<i>1963</i>	<i>1964</i>	<i>1965</i>
January	..	..	287	295	528	331	367	303
February	..	..	298	267	476	179	256	230
March	..	..	507	600	438	336	316	349
April	..	..	370	568	382	346	357	381
May	..	..	454	614	495	194	228	329
June	..	..	464	497	551	273	542	417
July	..	..	604	510	500	436	416	445
August	..	..	554	425	400	522	379	470
September		..	449	511	605	420	290	368
October	..	..	323	660	503	606	461	516
November		..	353	628	372	483	416	408
December	..	..	394	724	523	528	504	495
Total		..	<u>5,057</u>	<u>6,299</u>	<u>5,773</u>	<u>4,654</u>	<u>4,532</u>	<u>4,711*</u>
<i>Monthly Average</i>		..	421	525	481	388	377	392

*Provisional only.

The position of the Central Tuberculosis Register as at 31st December, 1965 was as follows:

CENTRAL TUBERCULOSIS REGISTER

Cases as at 1st January, 1965	29,186
Add cases registered in 1965 —	
(a) Pulmonary	4,541
(b) Extra-Pulmonary	170
	<u>4,711</u>
	33,897
Less cases removed from Register in 1965	<u>973</u>
Number of cases on the register as at 31st December, 1965. (Including inactive cases)	<u>32,924</u>

IV CENTRAL TUBERCULOSIS LABORATORY

Consistent with its functions, the Central Tuberculosis Laboratory performed all the bacteriological investigations of the Myco-bacterium group (excluding the Myco-bacterium lepræ) for all the Government hospitals and outpatient dispensaries. Positive cultures from the Singapore Anti-Tuberculosis Association and the British Military Hospital were received for drug sensitivity tests. With the acquisition of the Mechanical Shaker, the standard of our laboratory method of drug sensitivity tests improved and the laboratory could dispense with the former laborious practice of grinding positive cultures by self-improvised Griffiths rods. With the installation of an automatic pipetting machine, the laboratory was able to handle the increased volume of work in culture medias preparation.

Staffing proved to be another problem but despite the acute shortage (one qualified laboratory technician was seconded to the Blood Transfusion Unit and another on training), the Laboratory managed to keep up with marked increase of work (about 20 per cent) in bacteriological investigations and sensitivity tests.

Research

A study on the comparative efficacy of Isoniazide combined with Thiacetazone (TB₁) against PAS plus Isoniazide daily was carried out in Tan Tock Seng Hospital on 120 selected case. This laboratory was responsible for all the bacteriological work in this trial.

During the year tests were done for the assessment of virulency of the tubercle bacilli isolated. The following table gives the results of these tests.

ASSESSMENT OF VIRULENCY OF TUBERCLE BACILLI ISOLATED

<i>Test</i>	<i>No. of Tests</i>	<i>Negative</i>	<i>Doubtful</i>	<i>Positive</i>
Niacin Test ..	225	122	7	96
Neutral Red Test ..	23	20	1	2
Cord formation ..	44	27	5	12
Culture at 22°C to 25°C (growth in 3 — 5 days) ..	92	15	—	77

Cultures

A total of 45,336 cultures was done in 1965 as compared with 38,052 done in the previous year. The contamination rate had however increased from 0.5 to 1.5 per cent. The increase could be attributed to the fact that the laboratory functioned under very difficult conditions during its renovation. The tabulated figures below provide a detailed picture of the specimens done during the year.

CULTURES DONE DURING THE YEAR 1965

Number of Cultures done ..	45,336
Number of Cultures already reported ..	43,516
Number of Cultures still in incubation ..	1,820

Nature of Specimens	Total Re-ported	Number Nega-tive	Number Positive	Unclas. A.F.B.	Conta-minated	% Positive	% Conta-minated
Laryngeal Swabs ..	31,366	27,150	3,879	215	122	13.4	0.39
Sputum, Glavage and Mucous from Bron-chus	3,155	2,731	303	29	92	10.5	2.9
Urine	2,351	2,073	81	22	175	4.9	7.5
Cerebro-spinal Fluid ..	463	436	9	..	18	1.9	3.9
All Aspiration Fluids	561	522	28	2	9	5.3	1.6
Pus, Tissues, Bones, Currettings ..	389	327	51	..	11	13.1	2.8
Stool and Miscellaneous	113	83	4	1	25	4.4	22
Mass X-Ray L.S. ..	3,046	2,810	220	14	2	7.6	0.06
Mass X-Ray Sputum	2,072	1,775	240	54	3	14.4	0.14
Total ..	43,516	37,907	4,815	337	457	11.9	1.5

Appended below is a detailed report on the number of smears done in 1965.

CONCENTRATED SMEARS DONE (1965)

<i>Number of Smears done</i>	<i>Negatives</i>	<i>Positives</i>	<i>% Positives</i>
2,394	2,294	100	4.2

Compared with last year's number of 1,990 concentrated smears being examined, there was an increase of more than 400 smears examinations done this year.

Drug Sensitivity Tests

The laboratory method of drug sensitivity tests was in accordance with the Resistant Ratio Method of the Medical Research Council of England. Results of such tests done during the year are appended below:

DRUG SENSITIVITY TESTS DONE IN 1965

Number of Strains tested	5,951
Number of Strains reported	5,563
Number of Strains still in incubation	388
Number of Strains unsuccessful or contaminated ..	240

DRUG SENSITIVITY TESTS DONE BY RESISTANCE RATIO METHOD

<i>Drugs</i>		<i>Strains</i>	<i>Sensitive</i>	<i>Doubtful</i>	<i>Resistant</i>	<i>Contamina- ted</i>
INH ..	..	4,947	3,196	343	1,168	240
Streptomycin	..	4,947	3,121	280	1,306	240
P.A.S. ..	..	4,947	3,264	228	1,215	240
Cycloserine	..	382	354	2	26	—
Kanamycin	..	382	362	3	17	—
Viomycin	..	382	360	6	16	—
Ethionamide	..	382	265	24	93	—
Thiacetozone	..	234	169	40	25	240

Unclassified Myco-Bacteria

337 strains of unclassified Myco-bacteria have been isolated out of 43,516 cultures reported. Despite the shortage of staff, the Laboratory was able to carry out detailed investigations of suspected strains of Unclassified Myco-bacteria. According to the findings, most of these strains belonged to Runyun Group IV (Rapid Growers) and proved to be saprophytic and non-virulent by the Neutral Red and Serpentine Cord tests. Due to shortage of technical staff it was not possible to do a Niacin Test on every positive culture isolated. However, this test was performed on each strain isolated which showed resistance to the 3 main anti-tuberculosis drugs. In this way it was possible to sort out the Unclassified Myco-bacteria from the virulent but resistant tubercle bacilli.

Training

Techniques on tuberculosis bacteriology were demonstrated to various batches of Public Health Nurses, trainee nurses from hospitals and Sanitary Health Inspector who visited the laboratory. Particular emphasis was made on the importance of collecting materials for laboratory investigation and the disinfecting of contaminated material. The laboratory again drew favourable comment from the doctors who came on sponsored fellowships or in their private capacities. Laboratory techniques and facilities interested the visitors very much and it is our aim that the continued high performance should be maintained next year.

V MASS X-RAY CASE FINDING

Mass X-ray case-finding was continued unrelentlessly. For the year 86,332 persons were examined by X-rays showing an increase of 16.48 per cent over last years figure of 74,113 persons examined. However, despite the increased number examined the number of X-ray suspects discovered was only 2,286 compared to 2,583 of the previous year a fall of 11.5 per cent.

For the first time a campaign was launched to X-ray all members of the Government Civil Service. This programme was enthusiastically received from the start and the majority of them came forward to be examined. Of the 17,336 Government employees X-rayed, 682 were discovered to have suspicious lung tuberculosis and recalled for further investigation.

X-RAYS DONE IN 1965

	No. X-Rayed	Suspicious lung T.B. requiring investigation	Scars as a result of healed tuberculosis	Other non-Tuberculous lung disease	Heart and other abnormalities	Total abnormalities	Technical Fault and Artefact
<i>Community X-Ray Survey</i>							
Tampines	5,890	291	87	58	55	491	12
Jalan Kayu	4,414	168	54	36	33	291	21
Tanglin	2,185	87	21	17	24	149	4
Victoria Memorial Hall ..	4,832	194	59	50	23	326	6
Total ..	17,321	740	221	161	135	1,257	43
<i>Group X-Ray Survey</i>							
School Children (Class Contacts) ..	1,294	24	29	3	8	64	5
School Children (Tuberculin Reactors)	7,481	108	586	47	20	761	24
National Service Recruits ..	1,563	98	28	12	9	147	3
Government Employees ..	17,336	682	306	106	109	1,203	47
Families of Government Employees	1,497	32	24	11	14	81	11
Changi Prison	1,250	68	20	8	5	101	..
Secondary School Leavers ..	20,769	264	320	85	107	776	55
University of Singapore ..	810	19	6	4	9	38	1
Commercial Firms	148	9	4	2	1	16	..
Christmas Island	57	2	1	..	..	3	..
Royal Air Force, Far East ..	5,188	204	84	52	45	385	11
Miscellaneous	567	36	11	5	6	58	1
Total ..	57,960	1,546	1,419	335	333	3,633	158
<i>X-Ray Service only</i>							
Territorial Army Recruits ..	3,281	..	..	..	..	..	..
Diagnostic Clinic	2,561	..	..	..	..	..	..
Staff of T.B. Control Unit and T.T.S.H.	2,649	..	..	..	..	..	..
Teachers, New Recruits ..	2,560	..	..	..	..	..	..
Total ..	11,051	..	..	..	..	..	..
Grand Total ..	86,332	2,286	1,640	496	468	4,890	201

Community X-ray Survey was continued in 3 electoral divisions viz. Tampines, Jalan Kayu and Tanglin. The People's Association and the People Consultative Committee of the areas assisted actively in the propaganda and calling the residents up for X-rays. A Careers Exhibition was held in the Victoria Memorial Hall from 1st to 7th September, 1965, during which period free X-ray facilities were offered by our Mobile Team. 4,832 visitors to the Exhibition were X-rayed and 194 were found to be suspects and recalled for investigation for lung tuberculosis.

Static X-ray Centre

The Static X-ray Centre operated on two X-ray Units (one 70 mm. and 100 mm.) and catered for groups that could be brought over to the Centre for X-ray examination.

Diagnostic Clinic

All persons found by the Mass X-ray Units to have abnormalities in their Chest X-rays were recalled to the Diagnostic Clinic for investigation. Confirmed tuberculous cases were in turn referred to Tan Tock Seng Hospital for treatment and hospitalisation if necessary.

In this year 4,890 persons were found to have X-ray abnormalities out of 75,281 persons examined in the Mass X-ray Surveys making a recall rate of 6.48 per cent as compared to 5,139 persons recalled out of 69,119 persons examined (7.43 per cent) in 1964.

Out of these 4,890 persons with abnormal shadows in the chest X-rays 1,640 were due to scars as the result of healed tuberculous lesions, 496 due to other non-tuberculosis lung disease and 468 due to cardiovascular disease. The balance of 2,286 were suspicious lung tuberculosis and were recalled for full investigation. 2,278 turned up and were investigated. 556 were subsequently diagnosed as active tuberculosis and referred to Tan Tock Seng Hospital for treatment. For the year 7,745 attendances were made by all recalled cases to this clinic.

VI TUBERCULIN TESTING AND B.C.G. VACCINATION

Newborn Infants

The B.C.G. Team at the Kandang Kerbau Maternity Hospital continued its work of giving B.C.G. vaccinations to newborn infants delivered in the hospital. Of the 36,672 infants discharged as fit from the institution 32,521 were given B.C.G. vaccinations, showing a coverage of 88.68 per cent.

At the rural Maternal and Child Health Clinics, a total of 7,421 newborn infants was given B.C.G. vaccinations. B.C.G. vaccination at the City Maternal and Child Health Clinics was continued. At the end of the year 8,321 infants were recorded as being B.C.G. vaccinated. B.C.G. vaccination was also extended to Pulau Bukom and Pulau Tekong where 219 infants were vaccinated.

Institutions

Tuberculin testing with the Heaf Multiple Puncture method and B.C.G. vaccination were carried out in 15 institutional homes, 11 creches and 2 nursing schools. Of the 788 children newly admitted to the homes and creches, 480 were vaccinated with B.C.G. 486 new nursing students were also tested and 142 given the vaccination.

VII CONTACT INVESTIGATION

Contact investigations offered an important source in finding of new active cases of tuberculosis. All immediate contacts of all the notified cases in the Central Tuberculosis Register during the year were examined. The procedure of examination of contacts by the family as a unit introduced in 1964 was continued. Contacts below the age of 15 years were first tuberculin tested and negative reactors to this test were given B.C.G. vaccination. Positive reactors were given chest X-ray examinations. Contacts above the age of 15 years were all X-rayed without the preliminary tuberculin test.

From the 4,711 new notified cases registered during the year 14,266 new contacts were examined. 19,609 contacts (both new and old) under the age of 15 years were tuberculin tested and 8,178 were found to be negative reactors. Out of this latter group 6,759 were given B.C.G. vaccination.

9,248 contacts were above 15 years old were X-rayed and after investigation 273 were found to have active pulmonary tuberculosis, giving a case rate of 2.9 per cent.

Of the 11,431 contacts below 15 years of age who reacted positively to tuberculin test and submitted to X-ray examination 65 were found to have active tuberculosis.

89 new cases of children, under 5 years of age, with positive tuberculin reaction, and a clear chest X-ray, were given chemoprophylaxis.

Home Visiting Section

Home visits were made by nurses of this section to all new notified cases to initiate the investigation of contacts in the family. Another important part of the function of this section was checking on treatment defaulters to persuade them to continue their treatment.

Out of 4,711 cases notified during the year 3,423 families were visited. 507 families of such notified cases could not be traced and 781 families were contact investigated by their own doctors.

For the purposes of contact investigations and defaulters tracing the home visitors made a total of 11,463 visits in the year.

In addition 23,475 home visits were made to residents of Tampines, Jalan Kayu and Tanglin electoral divisions during the Mass X-ray campaign there to encourage and persuade the residents to attend the X-ray examinations.

VIII SCHOOL TUBERCULOSIS SERVICE

This service is located at the Institute of Health and its functions consist of:

- (1) Tuberculin Testing and B.C.G. Vaccination of School Children.
- (2) Tuberculosis casefinding in schools.
- (3) Investigation and treatment of cases found in the schools.
- (4) Investigation of the contacts from the tuberculosis cases derived from the schools.
- (5) Supplementary feeding of Tuberculous and undernourished school children.

(1) *Tuberculin Testing and B.C.G. Vaccination in School*

In this year a change was made in the method of tuberculin testing in the schools. As a general policy it was decided to use the WHO standard tuberculin test (Mantoux Test) using PPD.RT23 with Tween 80 and to give up using the Heaf Multiple puncture test gradually as more staff was trained for this Mantoux Test. This was to be in conformity with the other countries in this area so that results obtained locally could be compared with the rest of the world.

For a start the primary school testing was to remain using the Heaf Multiple puncture test while the tuberculin testing amongst secondary school leavers was to be the Mantoux Intradermal Test using 1T.U. PPD.RT23 with Tween as the standard test solution of tuberculin.

As before all primary students who reacted negatively to the tuberculin skin test were given B.C.G. vaccination and severe positive reactors were examined by chest X-ray. In the Secondary Schools all leavers were X-rayed irrespective of the result of the skin test.

During the year 90,465 primary school students and 20,437 secondary school leavers were tuberculin tested. B.C.G. vaccinations were given to 22,044 primary school and 3,200 secondary school negative reactors. 7,481 Primary school students and 20,769 Secondary school leavers were X-rayed.

Tables 145 and 146 show the tuberculin testing and B.C.G. vaccination in Primary Schools.

TABLE 145

TUBERCULIN TESTING AND B.C.G. VACCINATION OF
PRIMARY SCHOOL CHILDREN

NUMBER OF SCHOOLS COVERED 1957—1965

	<i>Year</i>		<i>Malay</i>	<i>Chinese</i>	<i>Tamil</i>	<i>English</i>	<i>Total</i>
1957	31	123	12	157	323
1958	20	28	—	140	188
1959	53	401	12	235	701
1960	62	397	16	267	742
1961	49	283	12	250	594
1962	35	234	15	162	446
1963	35	229	15	173	452
1964	37	232	15	181	465
1965	33	218	15	186	452

TABLE 146

TUBERCULIN TESTING AND B.C.G. VACCINATION
IN PRIMARY SCHOOLS

	<i>Year</i>		<i>Tuberculin Test done</i>	<i>No. Read</i>	<i>No. Negative</i>	<i>No. given B.C.G.</i>
1959	61,436	59,822	19,571	19,532
1960	70,172	67,538	23,710	23,144
1961	59,301	57,925	18,456	18,439
1962	75,763	73,538	25,247	25,247
1963	81,484	79,270	27,696	27,672
1964	84,524	82,003	33,370	33,104
1965	90,465	87,957	22,359	21,973

(2) Tuberculosis Casefinding in Schools

The usual methods of casefinding applied to the schools. Essentially cases from schools were derived from the following sources:

- (a) X-ray examination of severe reactors to tuberculin amongst Primary I and Primary VI students.
- (b) X-ray of Secondary School Leavers.
- (c) Contact Investigations from notified tuberculous cases from the school population.
- (d) Suspected cases referred by the school Health Officers during their routine examination of school children.
- (e) Routine 2-yearly X-ray examination of all school staff.

In the X-ray of Primary School students and Secondary School leavers out of 28,250 students examined the following abnormalities were discovered:

- 33 Primary Tuberculosis lesions;
 - 8 with tuberculous cervical lymphadenitis;
 - 5 Pleurisy with effusion of Tuberculosis origin;
- 179 Bronchogenic Tuberculosis.

Of the 179 Bronchogenic Tuberculosis or post-primary cases 14 were from the primary school students and 165 from the secondary school leavers. 66 of these cases were positive to tubercle bacilli either by laryngeal swab or sputum culture.

(3) School Tuberculosis Clinic

This clinic is responsible for the investigation and treatment of tuberculous cases from the school population. The main sources from which this clinic derived its cases are as follows:

- (1) Active Tuberculosis cases discovered as the result of X-ray examination of Primary Schools' tuberculin reactors and X-ray examination of Secondary Schools Leavers.

(2) Suspected cases referred by the school Health Officers during their routine examination of school children and pre-employment examination of school staff.

(3) Cases discovered by the examination of contacts of notified cases from the schools.

For the year, 618 new cases were treated in this school clinic. Total attendances for treatment from both new and old cases were 5,905 visits.

(4) *Contact Investigation of Index Cases Found in Schools*

Any active Tuberculosis case from the schools irrespective of their place of treatment (viz. Tan Tock Seng Hospital, SATA and General Practitioners, etc.) were notified to the School Tuberculosis Clinic. On receipt of the information, the school contacts of the index case were examined. Those in the primary schools were tuberculin tested and positive reactors were X-rayed. In the Secondary Schools, all contacts in the class were subject to X-ray examination.

Table 147 gives detailed information on the number of cases from the school population which were referred for investigation.

TABLE 147

CASES FROM THE SCHOOL POPULATION REFERRED
FOR INVESTIGATION

Source	No. Investi- gated	Primary T.B.		Pulm. T.B.		Other condi- tion	NAD	Pending
		Act.	Inact.	Act.	Inact.			
Primary School ..	261	33	35	14	—	55	121	3
Tuberculin Reactors ..	—	—	—	—	—	—	—	—
Teachers ..	1	—	—	1	—	—	—	—
Other School Staff	33	—	2	12	9	4	2	4
Class Contacts Primary School	8	—	3	—	—	4	1	—
Class Contacts Secondary School I — III ..	39	—	2	9	2	1	24	1
Secondary School Leavers ..	276	—	42	165	5	17	42	5
Total ..	618	33	84	201	16	81	190	13

(5) Supplementary Feeding of Infected and Undernourished School Children

This Feeding Scheme first started in 1949 was continued. For 1965, a sum of \$25,000 was allotted for this purpose. 367 new cases were put on feeding during the year. Altogether 7,567 feeds were given to 655 children. The feeding was a fortnightly distribution and each "feed" consisted of:

1 lb. Full Cream Milk Powder.	6 Eggs.
$\frac{1}{2}$ lb. Skimmed Powdered Milk.	6 Oranges.
$\frac{1}{4}$ lb. Ovaltine.	1 lb. Groundnuts.
$\frac{1}{2}$ lb. Butter.	

In addition, 7,020 lb. of skimmed milk powder donated by UNICEF were distributed to other school children and contacts.

Feeding 1965

Cases on feeds carried forward from December, 1964	..	288
New cases	..	367
Total cases	..	655
Cases of feeds in 1965	..	399
Cases carried forward to 1966	..	256

HOSPITALS AND RELATED SERVICES 1965

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965

SHOWING FORM OF DISEASE, RACE AND SEX

Form of Disease		CHINESE			MALAYS			INDIANS AND PAKISTANIS			OTHERS			PERSONS		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
PULMONARY	Minimal ..	1,092	482	1,574	185	51	236	93	13	106	6	5	11	1,376	551	1,927
	Moderately Advanced	928	295	1,223	109	37	146	93	18	111	6	3	9	1,136	353	1,489
	Far Advanced	485	135	620	47	26	73	35	6	41	3	..	3	570	167	737
	Extent not stated ..	160	54	214	20	9	29	10	3	13	2	..	2	192	66	258
Primary ..		16	12	28	4	6	10	2	2	4	..	..	..	22	20	42
Miliary ..		12	4	16	..	3	3	..	1	1	..	..	..	12	8	20
Meningitis ..		11	2	13	2	1	3	1	1	2	..	..	..	14	4	18
Pleural Effusion ..		43	23	66	4	7	11	5	3	8	2	1	3	54	34	88
Other Forms ..		42	42	84	7	12	19	15	11	26	2	1	3	66	66	132
Total ..		2,789	1,049	3,838	378	152	530	254	58	312	21	10	31	3,442	1,269	4,711

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965
SHOWING AGE, SEX AND FORM OF DISEASE

Age Group in years	MALES							FEMALES							PERSONS						
	Pulmonary	Primary	Miliary	Meningitis	Pleur. Effus.	Other Forms	Total	Pulmonary	Primary	Miliary	Meningitis	Pleur. Effus.	Other Forms	Total	Pulmonary	Primary	Miliary	Meningitis	Pleur. Effus.	Other Forms	Total
0—4	8	4	1	4	1	2	20	3	3	..	2	..	..	8	11	7	1	6	1	2	28
5—9	21	10	..	..	2	1	34	13	13	1	1	3	4	35	34	23	1	1	5	5	69
10—14	28	3	1	4	7	6	49	38	3	1	1	2	10	55	66	6	2	2	9	16	104
15—19	231	3	..	..	7	11	252	141	1	1	..	2	17	162	372	4	1	1	9	28	414
20—24	234	1	2	1	5	7	250	100	..	..	..	9	7	116	334	1	2	2	14	14	366
25—29	274	..	2	1	4	8	289	111	..	2	..	3	11	127	385	..	4	1	7	19	416
30—34	241	..	..	..	2	3	246	83	..	1	..	3	7	94	324	..	1	..	5	10	340
35—39	276	..	..	..	5	4	285	111	..	..	..	2	1	114	387	..	..	..	7	5	399
40—44	284	..	..	..	4	8	296	98	..	1	..	4	2	105	382	..	1	..	8	10	401
45—49	301	..	..	3	7	3	314	83	..	..	..	1	4	88	384	..	..	3	8	7	402
50—54	399	..	1	1	4	4	409	100	..	..	..	..	2	102	499	..	1	1	4	6	511
55—59	383	..	..	..	3	4	390	86	..	..	..	3	..	89	469	..	3	..	6	4	479
60—64	273	..	2	..	1	2	278	86	..	1	..	..	..	87	359	..	2	..	1	2	365
65—69	182	1	2	..	2	2	189	48	..	..	..	2	1	51	230	1	2	..	4	3	240
70—74	93	..	1	..	..	..	94	24	..	..	..	..	..	24	117	..	1	..	..	..	118
75 Over	46	..	..	..	..	1	47	12	..	..	..	..	..	12	58	..	..	..	..	1	59
Total	3,274	22	12	14	54	66	3,442	1,137	20	8	4	34	66	1,269	4,411	42	20	18	88	132	4,711

Appendix III

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965
SHOWING AGE, RACE AND SEX

Age Group in years	CHINESE			MALAYS			INDIANS AND PAKISTANIS			OTHERS			PERSONS		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0—4	13	3	16	6	3	9	1	2	3	..	..	..	20	8	28
5—9	25	21	46	7	10	17	2	3	5	..	1	1	34	35	69
10—14	45	43	88	4	8	12	..	3	3	..	1	1	49	55	104
15—19	225	135	360	14	15	29	12	10	22	..	2	3	252	162	414
20—24	210	93	303	28	15	43	12	7	19	..	1	1	250	116	366
25—29	227	97	324	48	22	70	14	7	21	..	1	1	289	127	416
30—34	190	76	266	34	11	45	18	7	25	..	..	4	246	94	340
35—39	211	90	301	42	18	59	29	4	33	..	2	5	285	114	399
40—44	214	88	302	43	12	55	37	3	40	..	2	4	296	105	401
45—49	231	75	305	37	10	47	43	3	46	..	..	3	314	88	402
50—54	338	88	426	34	9	43	35	5	40	..	..	2	409	102	511
55—59	330	79	408	33	6	39	27	4	31	..	..	..	300	89	479
60—64	241	75	316	22	12	34	13	..	13	..	2	2	278	87	365
65—69	159	50	209	20	1	21	8	..	8	..	2	2	189	51	240
70—74	87	24	111	3	..	3	2	..	2	..	2	2	94	24	118
75—Over	43	12	55	3	..	3	1	..	1	..	..	..	47	12	59
Total ..	2,789	1,049	3,836	378	152	529	254	58	312	21	10	31	3,442	1,269	4,711

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965

SHOWING OCCUPATION, RACE AND SEX

Occupation	Code	CHINESE			MALAYS			INDIANS AND PAKISTANIS			OTHERS			GRAND TOTAL		
		M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total
Professional, Technical and Related Occupation ..	0/09	47	15	62	5	2	7	5	..	5	1	..	1	58	17	75
Administrative, Executive and Managerial Occupations (Ex- cluding Those in Agriculture and Retail Trade) ..	10/19	4	..	4	1	..	1	3	..	3	1	..	1	9	..	9
Clerical Occupations ..	20/27	174	19	193	19	1	20	17	..	17	6	1	7	216	21	237
Sales and Related Occupations ..	30/39	368	17	385	10	..	10	41	..	41	..	..	..	419	17	436
Agricultural Occupations ..	40/49	79	2	81	12	..	12	2	..	2	..	..	..	93	2	95
Mines, Quarrying and Related Occupations ..	50/54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport and Communication Occupations ..	60/69	218	2	220	57	..	57	11	..	11	2	..	2	288	2	290
Craftsmen, Production Process Workers and Labourers N.E.C.	70/89	520	40	560	68	2	70	62	..	62	1	..	1	651	42	693
Service, Sport, Entertainment and Recreation Occupations ..	90/99	117	39	156	43	2	45	19	2	21	..	..	..	179	43	221

Appendix IV—contd.

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965

SHOWING OCCUPATION, RACE AND SEX

Occupation	Code	CHINESE			MALAYS			INDIANS AND PAKISTANIS			OTHERS			GRAND TOTAL		
		M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total
PERSONS ECONOMICALLY ACTIVE																
Home Housework ..	55	14	698	712	5	112	117	..	44	44	..	7	7	19	861	879
Full Time Student ..	56	222	120	342	14	18	32	9	8	17	1	2	3	246	148	394
Inmates of Mental Hospitals and Penal Institutions ..	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pensioners and Persons with Private Means ..	58	3	..	3	4	..	4	3	..	3	2	..	2	12	..	12
All Other Economically Inactive (e.g. 'Disabled', 'Too Old', 'Too Young', 'Inactive', etc.)	59	859	96	954	109	15	124	65	4	69	5	..	5	1,038	115	1,152
Occupation Not Stated ..	11.11	164	1	165	31	..	31	17	..	17	2	..	2	214	1	215
Total ..		2,789	1,049	3,837	378	152	530	254	58	312	21	10	31	3,442	1,269	4,708

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965

By Usual Place of Residence, Race and Sex

Place of Usual Residence	CHINESE			MALAYS			INDIANS AND PAKISTANIS			OTHERS			PERSONS		
	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total
City	1,862	782	2,644	174	65	239	180	41	221	10	6	16	2,226	894	3,120
Jurong	83	20	103	8	3	11	2	1	3	..	..	..	93	24	117
Bukit Panjang	72	26	98	11	3	14	10	3	13	..	..	..	93	32	125
Serangoon	390	121	511	34	8	42	33	8	41	2	2	4	459	139	598
Katong	349	97	446	143	64	207	27	5	32	5	2	7	524	168	692
Southern Islands	15	..	15	8	9	17	1	..	1	..	..	..	24	9	33
Federation	17	3	20	..	..	..	1	..	1	2	..	2	20	3	23
Overseas	1	..	1	..	..	..	..	..	..	2	..	2	3	..	3
Singapore Unspecified	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	2,789	1,049	3,838	378	152	530	254	58	312	21	10	31	3,442	1,269	4,711

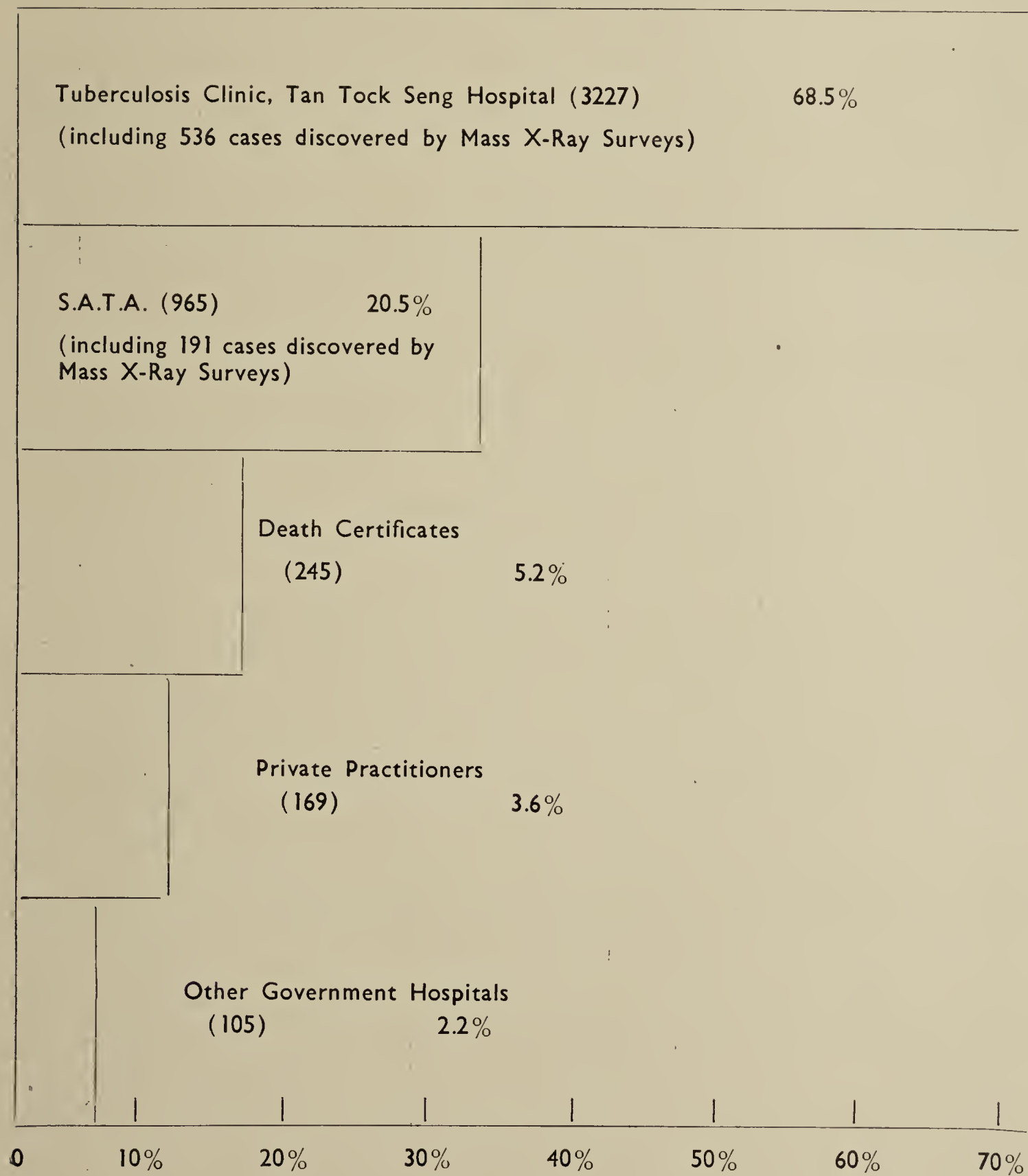
Appendix VI

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR 1965
SHOWING SPUTUM STATUS AND FORM AND EXTENT OF DISEASE

Sputum Status	PULMONARY				Primary	Miliary	Meningi- tis	Pleural Effusion	Other Forms	Total
	Minimal	Moderate	Advanced	Extent Not stated						
No exam. or no result	698	492	185	252	21	11	11	41	91	1,802
D.S. —ive; no culture or culture result unknown or contami- nated	748	349	56	3	4	5	4	24	28	1,221
D.S. —ive; culture —ive.	77	23	..	..	3	..	..	3	1	107
No sputum; L.S. —ive.	133	57	10	..	11	..	2	10	8	231
D.S. —ive; no culture, or culture result unknown or contami- nated	135	441	425	3	1	4	1	8	3	1,021
D.S. +ive; culture —ive.	..	1	..	..	..	..	..	..	..	1
D.S. —ive; culture +ive.	7	5	2	..	..	..	..	..	..	14
D.S. +ive; culture +ive.	4	15	15	..	..	..	..	..	..	34
No sputum; L.S. +ive.	125	106	44	..	2	..	..	2	1	280
Unclassified Mycobacteria	..	..	..	..	..	..	..	..	..	..
Total	1,927	1,489	737	258	42	20	18	88	132	4,711

Appendix VII

Histogram showing the source of discovery of cases of tuberculosis as percentage of total notifications for the year 1965.



As at 31st December, 1965 a total of 4,711 notifications was received.

GRAPH SHOWING DISTRIBUTION BY AGE AND SEX OF
TUBERCULOS CASES NOTIFIED IN 1965

Chapter Thirty

PHARMACEUTICAL SERVICES

THE PHARMACEUTICAL SERVICE is an integral unit of the Ministry having responsibility for the procurement, manufacture and supply of medicines, drugs, chemicals, surgical instruments, hospital furniture, crockery, etc. The service units comprise of dispensaries and stores in each hospital and clinic, staffed by Pharmacists and/or Dispensing Assistants and Storemen/Packers and the Government Pharmaceutical Laboratory and Store which is a Central Store and Manufactory.

The Head of the Service is the Chief Pharmacist, who is assisted by a Deputy Chief Pharmacist. The staff position in 1965 is given in Table 146.

TABLE 146
STAFF OF PHARMACEUTICAL SERVICE

					Chief Pharmacist	...	1
					Deputy Chief Pharmacist	...	1
<i>Institution</i>		<i>Sr. Pharm- acist</i>	<i>Pharm- acist</i>	<i>Pupil Pharm- acist</i>	<i>Chief Disp. Asst.</i>	<i>Sr. Disp. Asst.</i>	<i>Disp. Asst.</i>
Govt. Pharm. Lab. and Store	..	1	3	—	—	1	7
General Hospital	..	1	6	7	—	7	38
Kandang Kerbau Hospital	..	—	2	1	—	1	7
Outpatient Services	..	1	9	—	—	—	31
Tan Tock Seng Hospital	..	—	2	—	—	2	7
Thomson Road General Hospital	..	—	1	—	—	—	4
Social Hygiene	..	—	1	—	—	—	4
Trafalgar Home	..	—	1	—	—	—	1
Ministry of Health (Headquarters)	..	—	1	—	—	—	—
Woodbridge Hospital	..	—	1	—	—	—	1
Health Division	..	—	—	—	1	—	3
Chronic Hospital	..	—	—	—	—	—	1
		—	—	—	—	—	—
	Total ..	3	27	8	1	11	104
		—	—	—	—	—	—

All the hospital dispensaries and nine Out-Patient Departments are under the management of Pharmacists. Three new posts of Senior Pharmacists were filled towards the end of the year. The eight posts of pupil Pharmacists provide an opportunity for graduates of the School of Pharmacy, University of Singapore to obtain practical training for a period of one year. The Chief Dispensing Assistant retired in October and a Senior Dispensing Assistant was promoted to the vacant post.

GOVERNMENT PHARMACEUTICAL LABORATORY AND STORE

Stores Section

The Stores Section consists of five large godowns, three of which are at Silat Road and two others at McAlister Road. The value of stores maintained at any one time is between 1½ to 2 million dollars, which represents 4-6 months' consumption by all indenting units. Table 147 below gives details of the issue of stores and turnover value for the past four years.

TABLE 147
ISSUES BY STORES SECTION

Number of orders for supplies to hospitals, clinics, etc. in 1965	12,111
Total value of drugs, chemicals, etc. distributed	2,607,381
Total value of surgical equipment, dressings and sundries distributed	868,258
Total ..	<u>3,475,639</u>

TURNOVER FOR PAST 4 YEARS
(Total value of stores supplied)

1962	3,042,902
1963	3,227,277
1964	3,165,189
1965	3,475,639

The number of orders handled by the Stores Section in 1965 was 12,111, each of which may contain an average of 12 items. It has been computed that about 150,000 individual items were selected, issued and accounted for during the year. The total value of issues in 1965 was \$3,475,639 which is about 12 per cent above that of 1964. Delivery of orders is also undertaken by the Stores Section. Three lorries are used daily to transport the issues to the various hospitals and clinics in rotation.

A breakdown of the expenditure on principal items of drugs is given in Table 148. It will be noted that there has been no significant change in the demand for the major groups of drugs. The total value of the essential drugs used has remained steady at about a million dollars per annum.

The total value of purchases of Drugs and Chemicals, Surgical Stores, etc., amounted to \$3,387,887. Of this the value of local purchase was \$1,629,075 and purchases through Crown Agents amounted to \$1,758,813. Every effort is made to buy all requirements locally, but many items are only obtainable through the Crown Agents. Moreover, the Crown Agents with their world wide connection are able to offer more favourable terms as well as better service.

TABLE 148

MAIN ITEMS OF EXPENDITURE ON DRUGS AND CHEMICALS
FOR 1965 AND 1964

		<i>Quantity 1964</i>	<i>Cost 1964</i>	<i>Quantity 1965</i>	<i>Cost 1965</i>
			\$		\$
Tetracycline	.. ..	—	96,795	—	141,543
Streptomycin	.. ..	674,753G.	67,671	664,980	64,856
Procaine Penicillin Injs.	.. ..	304,464mu	25,216	90,000mu	8,179
Penicillin V Tabs.	.. ..	7,961,600	119,231	11,403,100	151,992
Chloramphenicol	.. ..	—	12,536	—	4,131
Penicillin Injs.	.. ..	111,475mu	5,453	399,792mu	27,315
ALL ANTIBIOTICS					
Sod. Aminosalicylate and Isoniazid	.. ..	—	326,902	—	398,016
Intramuscular Iron Injs.	.. ..	89,240	223,876	—	185,323
Corticosteriods	.. ..	—	40,473	24,996	10,199
Vitamins	.. ..	—	45,224	—	77,735
Sulphonamides	.. ..	—	45,626	—	39,066
Antihistamines	.. ..	3,205kgs.	43,316	3,565kgs.	53,536
Tolbutamide Tabs.	.. ..	—	31,535	—	25,365
Codeine Phosphate	.. ..	3,498,000	104,939	6,395,000	121,497
Chlorpromazine	.. ..	100kgs.	23,999	160kgs.	41,251
Insulin (Plain PZ and Lente)	.. ..	—	105,029	—	66,498
Alcohol	.. ..	18.36mu	24,776	18.09mu	26,144
Acetazolamide	.. ..	13,123gals.	24,730	14,574gals.	41,481
Cod Liver Oil	.. ..	5kgs.	349	—	—
		—	9,007	—	—
Total of main items — Expenditure on Drugs and Chemicals			1,049,781		1,086,111

The work of the Bulk Store and Imports Section is given in Table 149.

TABLE 149

SUMMARY OF WORK OF IMPORTS SECTION, 1965

Number of Bills of Lading exchanges	.. ..	639
Number of crates and parcels received:		
(1) per sea	.. ..	8,245
(2) per post, air and rail	.. ..	1,331
(3) local purchase	.. ..	2,896
Number of crates and parcels despatched:		
(1) per sea	.. ..	30
(2) per post, air and rail	.. ..	63
Number of claims on shippers or suppliers	.. ..	56

The 639 Bills of Lading and their connected invoices represent thousands of items ordered from overseas suppliers. The items included in each consignment, had to be collected from the Port, verified individually with the invoice, and checked against our orders. A similar procedure is in force with local purchases which totalled 2,896 separate consignments.

MANUFACTURE OF PHARMACEUTICALS

The Pharmaceutical Manufactory was fully utilised for the manufacture of a wide variety of items. Through lack of space and equipment it was only possible to manufacture about 50 per cent of the volume of products required by hospitals and clinics. Lack of local sources for bulk chemicals and drugs made it necessary to obtain the raw material from overseas. The Manufacturing Laboratories handled 3,090 Work Tickets involving the use of materials, mostly drugs and chemicals, valued at \$1,093,604. Table 150 below gives the main items of pharmaceuticals manufactured.

TABLE 150

PRODUCTION IN THE GOVERNMENT PHARMACEUTICAL
LABORATORY 1962 — 1965

				1962	1963	1964	1965
Tablets (Million)	..	..	..	124.6	130.5	99.8	112.8
Ampoules (No.)	..	..	..	672,658	635,555	570,011	633,944
Multidose Injection Vials (No.)	..	..	..	30,319	31,512	38,509	29,204
Sterile Transfusion Fluids (Pint Bottle)	..			145,435	181,350	182,514	212,378
Ear Drop, Eye Drop Vials, Nose Sprays (No.)				138,671	130,265	109,821	109,025
Tinctures, Infusions, Extracts, (Gallon)	..			8,569	9,203	1,345	2,198
Emulsions (Gallon)	..	..	..	810	766	618	781
Mixtures, Lotions, Liniments, (Gallon)	..			24,930	25,325	30,448	32,860
Antiseptic Fluids (Gallon)	..	..	..	15,448	13,715	12,688	13,273
Linctus and Syrups (Gallon)	..	..	..	19,589	20,245	21,492	24,851
Ointments and Creams (Lb.)	..	..	..	25,264	22,637	19,235	22,489
Ointments and Creams (Tube)	..	..	..	96,543	133,040	107,365	141,647
Laboratory Reagent Soln. (Litre)	..			405	620	475	525
Suppositories and Pessaries (No.)	..			75,533	55,633	49,203	78,888
Dressings (Tin × 20's)	..	..	..	3,501	4,056	2,400	3,200
Granules (Lb.)	..	..	..	6,273	8,408	14,896	11,332
Smelling Salt (1 oz. Bottle)	..	..	..	509	677	421	774
Capsules	..	..	..	1,224	600	1,300	1,200

The value of manufacture has remained steady over a period of four years at one million dollars. This is due to the fact that the present accommodation and facilities cannot be extended to handle more manufacture. If the proposal to build a new manufactory under the second 5-year plan is acted upon it would be possible to increase the volume of manufacture considerably.

It is a pleasure to record here the valuable services rendered by the Chief Chemist and officers of the Chemistry Department who performed all the analytical and control work involving the analysis of hundreds of chemicals and drugs as well as the determination of contents and stability of manufactured items. The Senior Pathologist and officers of the Pathology Department also rendered valuable service by conducting biological assays and performing sterility tests on our manufactured sterile solutions.

The staff of the Pharmaceutical Service have always given of their best and have endeavoured to maintain an efficient service under difficult conditions.

Chapter Thirty-one

LABORATORY SERVICES

DEPARTMENT OF PATHOLOGY

THE DEPARTMENT OF PATHOLOGY is the central laboratory for the State and comprises the Sections of Pathology, Bacteriology and Biochemistry. In addition bacteriological examination is done in the City Laboratory for specimens from infectious diseases as well as examination of water supplies and certain food products.

The volume and scope of work shows a continual increase for the last 5 years as given in the figures below:

NUMBER OF INVESTIGATIONS							<i>Percent Increase of work</i>
		1961	1962	1963	1964	1965	
Biochemistry	..	20,391	26,458	38,053	52,408	78,757	390
Bacteriology	..	123,118	165,257	282,667	359,961	305,543	254
Histology ..	..	19,958	16,722	19,708	20,123	35,946	175

The report is given under the following sections:

Biochemistry Section

In November 1965 the Biochemistry Section moved into six new laboratories on the second floor of the Pathology Building which cost \$35,000 for the alterations. Before this the Section occupied 2 rooms which were not designed for laboratory work and the facilities were insufficient to meet the ever increasing demand for this service. Additional laboratory space was also required because of the re-organisation of the Medical Laboratory Service. In this plan the Biochemistry Section, because of the proximity to the General Hospital and the availability of professional staff for close supervision, provides all the biochemical investigations for the General Hospital and all the other hospitals and health establishments in Singapore. The more specialised types of investigations and research which are too costly to duplicate at various levels are done here. On the 1st November, 1965, the biochemistry laboratory staff of the General Hospital was integrated into this Section as soon as the laboratories were available. It was necessary to produce a book for the information of the doctors and clinicians about the variety of tests which are done in this Section. Five hundred copies of the Handbook of Biochemical Investigations, a 42-page booklet were printed and distributed to the various hospitals.

Research and Development

Nineteen original methods have been developed since 1964 and the Section's staff are working on many more whenever time permits. A research grant of \$780 was given to the Section for the development of Micro and

Ultra-micro methods of biochemical examinations. A number of research projects were carried out in collaboration with several clinicians, among which the following may be cited:

- (a) Study on the various causes of neonatal jaundice.
- (b) Study on the causes of Methæmoglobinæmia in Children.
- (c) Biochemical variations of megoblastic anæmias.
- (d) The use of biochemical tests for the differential diagnosis of destructive diseases of the liver, including cancer.

Staff

One of the two Biochemists left the service to take up teaching in the schools. Before the integration of the General Hospital staff in November, the Section had some 16 technicians of which 7 were only fully trained. After the integration there are between 27–28 of which only 10 are fully trained.

Quality Control

A quality control laboratory was set up and specimens from the General Hospital, Thomson Road Hospital and Kandang Kerbau Hospital laboratories were sent regularly throughout the year for checking. The results obtained between the laboratories were comparable and were satisfactory for clinical purposes.

Fees

Fees for biochemical examinations continued to be chargeable from paying patients, private cases as well as those from outside Singapore. The number of paying patients represented 3 per cent–4 per cent of the work done in this Section.

Histology Section

The number of tissues rose from 10,422 in 1961 to 20,974 in 1965 and the number of sections from 19,958 in 1961 to 35,946 in 1965. The number of tissues would have been larger if not for the fact that the department had directed the surgeons not to send acutely inflamed appendices and products of conception from incomplete abortions. There were 1,977 cases of malignant new growths and 1,218 cases of innocent new growths. Endometrial tissues head the list of tissues examined followed very closely by cervix and cervical smears.

Staff

All the very detailed work of postmortems and biopsies were performed by one pathologist with four medical officers. The officers have been carrying out these onerous and responsible work efficiently. For the amount of work done, a very conservative estimate would be 4 qualified pathologists, 4 senior registrars and 4 medical officers. There is a general shortage of pathologists and efforts to recruit experienced pathologists from outside sources like

Australia and Canada have been unsuccessful. Two scholarships have been provided for trainee medical officers to undergo a course leading to the D.C.P. A trainee medical officer, Dr. Jimmy Hoo left in August 1965 for United Kingdom. Another officer, Dr. Chao Tzee Cheng is expected to leave in August 1966. It is hoped to obtain more trainee medical officers to work in this Section so that a full complement of experienced pathologists would be available in about 3 years time.

Development

It is hoped to provide celloidin embedding for central nervous systems, brains and eyes and to start a photographic section in 1966. Provision has been made in the 1966 Development Estimates and this will provide a long felt facility in the department.

Bacteriology Section

This section is concerned with routine diagnostic bacteriology as well as sanitary bacteriology conducted in the City Laboratory. The isolation of the City Laboratory away from the main bacteriology laboratory in the department is unsatisfactory as owing to the distance no proper supervision of methods as well as administrative control is possible. Senior staff have to make frequent visits to check the work. It is not only inconvenient but a waste of time. Moreover, the bacteriological investigation of infectious material, etc. should not be done in a building, i.e. the City Hall which is used as offices as well as for the conduct of business for the public. Provision has been made in the 1966 Development Estimates for the erection of a new building in the grounds adjacent to the bacteriological laboratories in the General Hospital. It is expected that this building will be completed in by the end of 1967.

Staff

Dr. Moses Yu returned from United Kingdom in April 1965 with the Diploma in Bacteriology. He also participated in the W.H.O. Training Course in Enteric Infections held in Budapest, Hungary from 3rd November to 1st December, 1965. The staff has been strengthened by the posting of a trainee medical officer in bacteriology. It is hoped that this officer will leave in August 1966 to undertake a course leading to the Diploma in Bacteriology. Mr. Chew Theng Sang, a technician has been receiving training in tissue culture work at the University Department of Bacteriology through the kindness of Professor Lim Kok Ann.

Mosquito Antigens

The laboratory prepared a mosquito antigen which was used to desensitise a patient who was hypersensitive to mosquito bites. Every mosquito bite ended up with a gangrenous ulcer.

Antibodies against Entamoeba Histolytica

The laboratory is working on an antigen from our amoeba culture to see if it can be used in a complement fixation test or a hæmagglutination test. This project is still in progress.

Typhoid outbreak

In April 1965 a typhoid outbreak occurred in Chung Cheng High School. The Bacteriology Section worked in close liaison with the Public Health Division in investigating a large number of specimens from patients in Middleton Hospital as well as from contacts and hawkers supplying food to the school. The staff went to the Middleton Hospital daily to collect swabs from hawkers and contacts. The organisms isolated were sent to Collindale Laboratory for phage typing.

Pregnancy Test

The long established practice of using toads has been replaced by the Gravindex test. This test takes about a couple of minutes and is more specific than the old toad test and has the advantage of doing away with the purchase and maintenance of toads.

Minor Development

A main reception room was erected in the Lobby of the ground floor to receive specimens from the wards as well as to distribute empty sterilised containers to attendants. Previously the attendants used to wander in and out of the laboratories. The provision of this room by restricting movement to a minimum reduces contamination to an appreciable extent. The serological section which occupied a room on the first floor was transferred to the bacteriological laboratory on the ground floor.

Laboratory Technicians continued to be trained in the Department. Examinations were held in March and September 1965. Ten candidates were successful in the March Examination and ten in the September Examination.

It is with pleasure that I have to record that in spite of staff shortage at various levels, the work of the Department has continued to expand and this is in no small measure due to the co-operation of all staff concerned. We look forward to continued expansion in all sections and expect to maintain a high standard of work which has been achieved during the past year.

STAFF

Senior Pathologist *Vacant*
 Dr. A. O. Aaron, L.M.S. (S'pore) (*Acting*).

MORBID ANATOMY SECTION

Pathologist Dr. Tan Kheng Khoo, M.B.B.S., D.C.P., Dip. Path
 (London).
 Medical Officers Dr. Hoo Chun Chuen, M.B.B.S. (S'pore). On study
 leave in U.K. Left in August 1965.
 Dr. Chao Tzee Cheng, M.B.B.S. (H.K.)
 Dr. Ong Beng Hock, M.B.B.S. (S'pore).
 Dr. Lee Swee Kok, M.B.B.S. (S'pore) — Appt. 3-9-65.
 Dr. Kenji Sugai, M.D. (Tokyo Univ.) Contract Officer.

BACTERIOLOGY SECTION

Senior Registrar Dr. Moses Yu, M.B.B.S. (Malaya), Dip. Bact.
 (Manchester).
 Medical Officers Dr. K. Karunakaran, M.B.B.S. (Madras) (City Labora-
 tory).
 Dr. Margaret Chee, M.B.B.S. (Sydney). Temporary
 officer resigned on 16-9-65.
 Dr. Sng Ewe Hui, M.B.B.S. (S'pore). Transferred from
 Medical Unit II, G.H. w.e.f. 17-9-65.

BIOCHEMISTRY SECTION

Senior Biochemist Dr. Lee Kum Tatt, B.Sc. (Hons.), Ph. D., M.C.I.C.,
 F.R.I.C., M.I.S.C.
 Biochemists Mr. Tan It Koon, B.Sc. (Hons.) (S'pore).
 Miss Irene Giam, B.Sc. (Hons.) (S'pore), M.Sc.,
 Michigan State University. — Transferred to
 Ministry of Education w.e.f. 23-8-65.
 Senior Laboratory Technicians .. Mr. Cheah Hong Huat — Retired on 2-4-65.
 Mr. Chua Chor Kai
 Mr. Kwek Cheng Hoe
 Mr. J. Yeo Eng Kee (City Laboratory)
 Laboratory Technicians/Laboratory
 Technicians-in-Training .. 33 posts.

OFFICE

Executive Officer Mr. Aziz Champion
 Clerical Officers Mr. Loh Seow Tuan — Transferred from Ministry of
 Health w.e.f. 29-1-65.
 Miss Lily Yong.
 Mr. Chang See Tong — appointed on 19-5-65.
 Clerical Assistant Mr. Lee Hock Seng — appointed on 19-5-65.
 Stenographer Mrs. Koh Thin Hoa
 Typist Miss Chan Yoke Har
 Office Boy Mr. M. Hassan bin Naim.

BIOCHEMISTRY SECTION — DEPARTMENT OF PATHOLOGY

<i>Section A</i>	<i>Blood</i>				<i>No. of Test</i>
1. Amylase	211
2. Alkali reserve	807
3. Bilirubin	1,125
4. Calcium	1,026
5. Cholesterol	534
7. Fibrinogen	15
9. Phosphatase, acid	65
10. Phosphatase, alkaline	327
11. Phosphate, inorganic	699
12. Proteins, A/G	1,146
13. Sugar	958
15. Thymol turbidity	523
16. Urea	3,266
17. Uric acid	256

Urine

18. Acetoacetic acid .. ..	..	..	..	..	—
19. Acetone .. ..	..	..	..	..	—
21. Barbiturates .. ..	..	..	..	..	2
22. Bile salts .. ..	..	..	..	..	—
23. Bilirubin .. ..	..	..	..	..	—
24. Bence Jones .. ..	..	..	..	..	18
25. Calcium, qualitative .. ..	..	..	..	..	3
26. Chlorides .. ..	..	..	..	..	27
27. Coproporphyrin (Qualitative) .. ..	..	..	..	..	21
28. Diastase .. ..	..	..	..	..	155
29. Porphobilinogen .. ..	..	..	..	..	3
30. Protein .. ..	..	..	..	..	21
31. Glucose .. ..	..	..	..	..	7
32. Salicylates .. ..	..	..	..	..	—
33. Urea .. ..	..	..	..	..	20
36. Uric Acid .. ..	..	..	..	..	10
41. Augmented Histamine Test .. ..	..	..	..	..	18
42. Bromsulphatalein Test .. ..	..	..	..	..	103
43. Fractional Test Meal .. ..	..	..	..	..	46
44. Alcohol Test Meal .. ..	..	..	..	..	—
45. Insulin Test Meal .. ..	..	..	..	..	2
46. Histamine Test Meal .. ..	..	..	..	..	1
47. Examination of C.S.F. .. ..	..	..	..	..	877
48. Urea Clearance Test .. ..	..	..	..	..	—

*Section B**Blood*

49. Abnormal blood pigments .. ..	..	..	..	..	113
50. Creatine .. ..	..	..	..	..	16
51. Creatinine .. ..	..	..	..	..	206
52. Potassium .. ..	..	..	..	..	17,104
Sodium .. ..	..	..	..	..	16,973
Chlorides .. ..	..	..	..	..	16,832
53. Glutamic-oxaloacetic Transaminase .. ..	..	..	..	..	3,851
54. Glutamic-pyruvic Transaminase .. ..	..	..	..	..	2,223
55. Iron, inorganic .. ..	..	..	..	..	217
56. Methaemoglobin .. ..	..	..	..	..	140
58. Pyruvic acid .. ..	..	..	..	..	178

BIOCHEMISTRY SECTION — DEPARTMENT OF PATHOLOGY
—continued

<i>Section B</i>	<i>Urine Analysis</i>				<i>No. of Test</i>
59. Ammonia, nitrogen	—
60. Ascorbic acid	24
61. Blood pigments	124
62. Calcium, qualitative	67
64. Creatine	19
65. Creatinine	222
66. pH	4
67. Phosphorus, inorganic	84
68. Potassium	37
69. Sodium	28
72. Calculi	17
73. Congo Red Test	14
74. Creatinine Clearance Test	—
75. Phenol Red Test	28
76. Tubular Reabsorption of Phosphate	—
77. Vitamin C Saturation Test	—
<i>Section C</i>	<i>Blood Analysis</i>				
78. B-carotene	6
79. Copper	31
80. Iron-binding capacity	722
81. Lactic Dehydrogenase	431
82. Magnesium (Micro-Method)	26
83. Protein electrophoresis	1,349
	<i>Urine Analysis</i>				
84. Amino-acid N.	36
85. Chondroitin Sulphate B.	7
86. 17-Hydroxy-Cortico-steroids	220
87. 5-Hydroxy-indoleacetic acid	14
88. 17-Ketosteroids	282
90. Protein, electrophoresis	1
91. Digestive Enzymes in Miscellaneous fluids	—
92. Electrolytes in Sweat	2
93. Faecal Fat	89
94. Trypsin in faeces	—
<i>Section D</i>	<i>Blood Analysis</i>				
96. Aldolase	174
100. Caeruloplasmin	39
102. Calcium (Micro-Method)	54
105. Cholinesterase	111
106. Creatine Phosphokinase	141
107. Electrolytes, Micro-Method	167
109. Glucose, Micro-Method	293
110. Glucose-6-Phosphate Dehydrogenase	215
111. Glutamic Dehydrogenase	49
112. Glutathione (G.S.H.)	—
113. Glutathione stability Test	241
114. Hydroxybutyric acid Dehydrogenase	139
115. Iodine, protein bound	203
116. Isocitric Dehydrogenase	377
117. Leucine Amino Peptidase	92
118. Lipase	2
119. Methaemoglobin Reduction Test	279
120. Palladium combining capacity (acid medium)	150
121. Palladium combining capacity (neutral medium)	138
122. 6-Phospho-gluconic acid Dehydrogenase	215

BIOCHEMISTRY SECTION — DEPARTMENT OF PATHOLOGY
—continued

<i>Section D</i>	<i>Blood Analysis</i>				<i>No. of Test</i>
123.	Phospho-hexose Isomerase	..	..	..	13
125.	Protein total (Micro-Method)	..	..	..	—
126.	Salicylate	..	..	..	—
128.	Urea, micro-method	..	..	..	336
129.	Vitamin B1	..	..	..	—
<i>Urine Analysis</i>					
131.	Catecholamines	..	..	..	1
132.	Copper	..	..	..	38
133.	Cystine, Free /total	..	..	..	24
134.	3-Methoxy-4-Hydroxy-mandelic acid	..	..	..	172
135.	Coproporphyrins (Quantitative)	..	..	..	3
137.	Uroporphyrin (Quantitative)	..	..	..	—
<i>Function. Tests</i>					
139.	Formimino-glutamic acid in urine	..	..	..	34
140.	Glucose Tolerance Test (Micro-Method)	..	..	..	82
141.	Vitamin-A Absorption Test	..	..	..	32
142.	Xylose Excretion Test	..	..	..	3
BLOOD					
G.T.T.	..	..	..	..	216
NPN	..	..	..	..	15
Amino-acid N.	..	..	..	..	5
Salicylate	..	..	..	..	1
Packed Cell volume	..	..	..	..	242
Protein, total	..	..	..	..	150
Sorbitol Dehydrogenase	..	..	..	..	48
TOTAL					677
URINE					
Diuzo Test	..	..	..	..	2
Pregnanetriol	..	..	..	..	2
Lactic Dehydrogenase	..	..	..	..	18
Leucine Amino Peptidase	..	..	..	..	20
TOTAL					42
FAECES					
Steriobilinogen	..	..	..	..	13
MISCELLANEOUS FLUIDS					
Amylase	..	..	..	..	2
Free acids	..	..	..	..	10
Total acids	..	..	..	..	10
Na	..	..	..	..	14
K	..	..	..	..	13
Chloride	..	..	..	..	13
pH	..	..	..	..	9
Fat	..	..	..	..	1
Total Protein	..	..	..	..	6
Glucose	..	..	..	..	4
Trypsin	..	..	..	..	1
SGOT	..	..	..	..	20
SGPT	..	..	..	..	20
Pepsin	..	..	..	..	28
Bilirubin	..	..	..	..	20
L.D.	..	..	..	..	8
TOTAL					179
GRAND TOTAL No. of Tests					78,757

HISTOLOGY SECTION

1965

Total number of sections	29,487
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Sections from Biopsies:

Total number of Cases	11,064
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*Total number of Tissues	14,358
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Total number of Sections	20,974
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(*Including cytological exam.)

Sections from Necropsies:

Total number of Cases	1,103
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Total number of Sections	8,513
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AN ANALYSIS OF HISTOLOGICAL DIAGNOSIS

1. *Inflammatory:*

(a) Acute inflammation	458
(b) Acute and chronic (subacute) inflammation	..	..	..	71
(c) Chronic inflammation	..	..	..	1,647
(d) Granulomatous inflammation	..	..	..	627
(1) Tuberculosis	..	..	388	
(2) Leprosy	..	..	129	
(3) Filariasis	..	..	9	
(4) Other Helminths	..	..	95	
(5) Fungal	..	..	6	
(e) Inflammation with repair and/or Fibrosis	..	..	174	
(f) Inflammation with subsequent Morpho/Alteration	..	..	96	
(g) Inflammation superimposed on Morpho/Alteration	..	..	95	
(h) Fibrosis and/or Repair	..	..	171	
(i) Inflammation non-specific	..	..	288	
(j) Inflammation allergic	..	..	19	

2. *Traumatic Abnormalities:*

(1) Effects of Surgical Procedures	..	..	10
(2) Wounds	..	..	41
(3) Fractures	..	..	1
(4) Miscellaneous	..	..	6
(5) Disorganisation	..	..	1

3. *Congenital Malformations:*

(1) Abnormalities of Pregnancy and POC	..	..	355
(2) Ectopic Pregnancy	..	..	98
(3) Malformations and Deformities of parts of body	..	..	37
(4) Congenital absence, accessory, supernumerary organs and tissues	..	..	17
(5) Ectopic (Heterotopia)	..	..	1
(6) Intersex	..	..	3

4. *Mechanical Abnormalities:*

(1) Dilatation and Diverticula	..	..	82
(2) Retention of contents (cystic and non-cystic)	..	..	399
(3) Obstruction, Stenosis, Thrombus and Embolus	..	..	94

5. *Degeneration, Necrosis and Depositions:*

(1) Degeneration which occurs in only one kind of tissue	..	..	105
(2) Necrosis	..	..	85
(3) Deposition	..	..	13
(4) Deposition of Pigments	..	..	18
(5) Collagen Disease	..	..	39

AN ANALYSIS OF HISTOLOGICAL DIAGNOSIS — *continued*6. *Alteration of Growth and Atrophy:*

(1) Atrophy	..	..	..	..	54
(2) Dystrophy	..	..	..	..	5
(3) Hypertrophy	..	..	..	..	140
(4) Metaplasia with/without Atypia	..			..	86
(5) Dysplasia	..	..	..	..	57
(6) Hyperplasia with/without Atypia			..	..	658

7. *Neoplasia:*

				<i>Malignant</i>	<i>Benign</i>
(1) Tumours of Glandular Epithelium	..			592	402
(2) Tumours Non-glandular Epithelium	..			1,251	228
(3) Leukaemia	..	..	..	19	—
(4) Lymphoma	..	..	..	39	3
(5) Tumours of Nervous tissues and associated structures	..	..	..	17	43
(6) Tumours of Vascular tissues	..		..	2	101
(7) Tumours of Connective tissue and muscle	..			37	357
(8) Tumours of Non-epithelial tissues	..			3	20
(9) Tumours of Embryonal and mixed tissues				17	64

ANALYSIS OF TISSUES EXAMINED

1.	Anal and ischio-rectal tissues	..	..	..	162
2.	Animal Tissues	..	..	..	41
3.	Appendix	..	..	..	825
4.	Adrenals	..	..	..	4
5.	Acetic fluid	..	..	..	107
6.	Bladder	..	..	..	113
7.	Bladder washout	..	..	..	2
8.	Blood vessels	..	..	..	38
9.	Bones	..	..	..	199
10.	Bone-marrow	..	..	..	15
11.	Brain and Meninges	..	..	..	37
12.	Fluid from Brain	..	..	..	4
13.	Broad Ligament and Parametrial tissues	..	..	..	11
14.	Breast	..	..	..	289
15.	Bronchus	..	..	..	121
16.	Bronchial Smears	..	..	..	162
17.	Blood Films	..	..	..	4
18.	Cervix and cervical smears	..	..	..	1,426
19.	Colon and Rectum	..	..	..	134
20.	Cerebro-Spinal fluid	..	..	..	8
21.	Diaphragm	..	..	..	2
22.	Ear	..	..	..	63
23.	Endometrium	..	..	..	2,297
24.	Eye and eyelids, etc.	..	..	..	122
25.	Fallopian Tube	..	..	..	446
26.	Gall bladder	..	..	..	180
27.	Heart muscle	..	..	..	32
28.	Pericardial fluid	..	..	..	8
29.	Hydrocele fluid	..	..	..	3
30.	Intestines	..	..	..	96
31.	Joints and synovial tissue	..	..	..	136
32.	Aspiration joints	..	..	..	3
33.	Kidney	..	..	..	188
34.	Larynx	..	..	..	129
35.	Liver	..	..	..	685
36.	Aspiration liver	..	..	..	6
37.	Lung	..	..	..	143
38.	Lymph node	..	..	..	763
39.	Mastoid Antrum	..	..	..	3
40.	Mesentery	..	..	..	6
41.	Muscles	..	..	..	55
42.	Mouth and Dental diseases	..	..	..	70
43.	Mediastinum	..	..	..	2
44.	Nerves and sympathetic ganglia	..	..	..	111
45.	Nose and Nasopharynx and sinuses	..	..	..	559

Carried forward .. 9,810

ANALYSIS OF TISSUES EXAMINED — *continued*

				<i>Brought forward</i>	..	9,810
46.	Excretion from nose	..	..	..	..	1
47.	Oesophagus	..	..	..	..	210
48.	Omentum	..	..	..	..	56
49.	Ovary	..	..	..	..	501
50.	Pleura	..	..	..	..	243
51.	Pleural fluid	..	..	..	..	289
52.	Palate	..	..	..	..	21
53.	Pancreas	..	..	..	..	28
54.	Parathyroid	..	..	..	..	6
55.	Penis	..	..	..	..	33
56.	Peritoneum	..	..	..	..	38
57.	Peritoneal fluid	..	..	..	..	22
58.	Pharynx	..	..	..	..	4
59.	Placenta	..	..	..	..	15
60.	Prostate	..	..	..	..	161
61.	Pituitary	..	..	..	..	6
62.	Retroperitoneal Tissues	..	..	..	..	9
63.	Extraperitoneal Tissues	..	..	..	..	1
64.	Intra-abdominal Tissues	..	..	..	..	5
65.	Salivary gland	..	..	..	..	70
66.	Scrotum	..	..	..	..	18
67.	Skin and subcutaneous tissues	..	..	..	..	1,332
68.	Spleen	..	..	..	..	66
69.	Sputum	..	..	..	..	17
70.	Stomach	..	..	..	..	384
71.	Stomach contents	..	..	..	..	4
72.	Spinal cord	..	..	..	..	15
73.	Spinal fluid	..	..	..	..	1
74.	Spermatic cord	..	..	..	..	6
75.	Testes, epididymis and Vas deferens	..	..	..	..	87
76.	Thyroid gland	..	..	..	..	267
77.	Tongue	..	..	..	..	48
78.	Tonsils	..	..	..	..	40
79.	Trachea	..	..	..	..	1
80.	Thymus and Thoracic tissues	..	..	..	..	4
81.	Urethra	..	..	..	..	38
82.	Ureter	..	..	..	..	35
83.	Urine	..	..	..	..	10
84.	Uterus	..	..	..	..	315
85.	Umbilicus and cord	..	..	..	..	6
86.	Vagina	..	..	..	..	94
87.	Vulva	..	..	..	..	40
88.	Worms	..	..	..	..	1
TOTAL						14,358

NEOPLASIA

					<i>Malignant</i>	<i>Benign</i>
1.	Anal and Ischio-rectal tissues	..	..	..	45	11
2.	Appendix	..	..	..	3	—
3.	Adrenals	..	..	..	—	1
4.	Acetic Fluid	..	..	..	11	5*
5.	(a) Bladder	..	..	..	35	9
	(b) Blood vessels	..	..	..	2	—
6.	Bones	..	..	..	29	15
7.	Bone marrow	..	..	..	8	—
8.	Brain and Meninges	..	..	..	11	4
9.	Fluid from Brain	..	..	..	1	—
10.	Broad Ligament and Parametrial tissues	..	..	..	2	2
11.	Breast	..	..	..	95	72
12.	Bronchus	..	..	..	52	1
13.	Bronchial smears	..	..	..	9	1*
14.	Blood Films	..	..	..	2	—
15.	Cervix	..	..	..	190	73
16.	Colon and Rectum	..	..	..	69	6
17.	Ear	..	..	..	7	29
18.	Endometrium	..	..	..	53	16
19.	Eye, and eyelids, etc.	..	..	..	16	37
20.	Fallopian Tube	..	..	..	8	—
21.	Gall Bladder	..	..	..	9	—
22.	Pericardial fluid	..	..	..	1	1*
23.	Intestines	..	..	..	4	3
24.	Joints and synovial tissues	..	..	..	3	12
25.	Kidney	..	..	..	10	—
26.	Larynx	..	..	..	67	15
27.	Liver	..	..	..	126	—
28.	Aspiration Liver	..	..	..	2	—
29.	Lung	..	..	..	24	2
30.	Lymph node	..	..	..	268	2
31.	Mastoid antrum	..	..	..	1	1
32.	Mediastinum	..	..	..	—	2
33.	Mesentery	..	..	..	3	1
34.	Mouth and Dental Diseases	..	..	..	31	9
35.	Nerves and sympathetic ganglia	..	..	..	—	3

* Probably malignant.

NEOPLASIA — *continued*

				<i>Malignant</i>	<i>Benign</i>
36.	Nose and Nasopharynx and Sinuses	..	..	186	27
37.	Oesophagus .. .. .	..	..	110	—
38.	Omentum .. .. .	..	..	31	—
39.	Ovary .. .. .	..	..	30	126
40.	Palate .. .. .	..	..	12	—
41.	Pancreas .. .. .	..	..	5	1
42.	Parathyroid .. .. .	..	..	—	3
43.	Penis .. .. .	..	..	20	8
44.	Peritoneum .. .. .	..	..	9	1
45.	Peritoneal fluid .. .. .	..	..	—	1*
46.	Pharynx .. .. .	..	..	1	—
47.	Pituitary .. .. .	..	..	—	5
48.	Pleura .. .. .	..	..	29	—
49.	Pleural fluid .. .. .	..	..	38	16*
50.	Prostate .. .. .	..	..	17	—
51.	Retroperitoneal Tissues .. .. .	..	..	6	1
52.	Intra-abdominal tissue .. .. .	..	..	1	—
53.	Salivary gland .. .. .	..	..	11	31
54.	Scrotum .. .. .	..	..	1	1
55.	Skin and subcutaneous tissues .. .. .	..	..	123	313
56.	Spermatic cord .. .. .	..	..	1	—
57.	Spleen .. .. .	..	..	2	—
58.	Stomach .. .. .	..	..	83	3
59.	Spinal cord .. .. .	..	..	5	4
60.	Testis, epididymis and Vas deferens .. .. .	..	..	8	2
61.	Thyroid gland .. .. .	..	..	24	109
62.	Tongue .. .. .	..	..	22	7
63.	Tonsils .. .. .	..	..	13	—
64.	Urethra .. .. .	..	..	1	24
65.	Ureter .. .. .	..	..	1	1
66.	Urine .. .. .	..	..	—	1*
67.	Uterus .. .. .	..	..	21	203
68.	Vagina .. .. .	..	..	22	7
69.	Vulva .. .. .	..	..	10	16
TOTAL ..				2,040	1,244

* Probably malignant.

POST MORTEM EXAMINATIONS

1965

Total number of Necropsies	..	..	2,230
(1) Coroner's Cases	..	..	996

These necropsies were conducted by the Staff of Government Department of Pathology.

(2) Hospital Cases	1,234
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AGE, SEX, RACE DISTRIBUTION OF AUTOPSIES ON ALL DEATHS

CORONER'S AND WARD CASES 1965

Age		CHINESE		INDIANS		MALAYS		OTHERS		TOTAL		Grand Total
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Under 1 year	..	466	345	17	16	2	3	5	..	490	364	854
1 — 10	..	99	97	10	5	10	2	2	..	121	104	225
11 — 20	..	88	31	5	2	5	3	1	1	99	37	136
21 — 30	..	80	36	18	3	16	6	4	..	118	45	163
31 — 40	..	67	36	32	1	9	3	4	..	112	40	152
41 — 50	..	87	29	34	2	7	1	5	..	133	32	165
51 — 60	..	148	45	39	5	3	..	3	1	193	51	244
61 — 70	..	118	29	14	1	2	..	2	..	136	30	166
Over 70	..	47	26	5	1	1	..	..	2	53	29	82
Total	..	1,200	674	174	36	55	18	26	4	1,455	732	2,187

Autopsies of unknown Cases .. + 43

Total .. 2,230

DEATHS FROM VIOLENCE

1.	Hanging	..	..	..	..	34
2.	Strangulation	..	..	..	..	2
3.	Drowning	..	..	..	..	51
4.	Firearms	..	..	..	..	11
5.	Explosives	..	..	..	..	3
6.	Blast injuries	..	..	..	..	1
7.	Crush injuries	..	..	..	..	1
8.	Cutting and piercing instruments	..	..	..	..	27
9.	Injuries by Blunt Instruments	..	..	..	..	5
10.	Train Accidents	..	..	..	..	4
11.	Vehicle Accidents	..	..	..	..	231
12.	Fall from Heights	..	..	..	..	56
13.	Falls	..	..	..	..	34
14.	Decomposed corpses and Human remains	..	..	..	..	24
15.	Injuries by falling objects	..	..	..	..	11
16.	Burns	..	..	..	..	7
17.	Choking	..	..	..	..	9
18.	Electrocution	..	..	..	..	4
19.	Lightning	..	..	..	..	4
20.	Suffocation	..	..	..	..	3
21.	Machinery	..	..	..	..	5
22.	Bee Stings	..	..	..	..	1
23.	Fat Embolism	..	..	..	..	8
24.	Tetanus — uterine	..	..	..	..	2
	others	..	..	..	..	6
25.	Still Births	..	..	..	..	138
Total						682

DEATHS FROM POISONING

1.	Caustic Soda	..	..	..	..	11
2.	Barbiturates	..	..	..	..	9
3.	Malathion	..	..	..	..	3
4.	Cresols	..	..	..	..	1
5.	Methyl salicylate	..	..	..	..	1
6.	Salicylic acid	..	..	..	..	1
7.	Hydrochloric acid	..	..	..	..	1
8.	Carbon Monoxide	..	..	..	..	1
9.	Hyoscine (Scopolamine)	..	..	..	..	1
10.	Acetic acid	..	..	..	..	1
11.	Largactil	..	..	..	..	1
12.	Tetra-ethyl lead	..	..	..	..	1
13.	Methyl alcohol	..	..	..	..	3
14.	Hydrogen cyanide	..	..	..	..	1
Total						36

DEATHS FROM ILL-DEFINED CAUSES

1.	Post-operative	..	..	..	..	2
2.	Unestablished and obscure causes	..	..	..	..	2
Total						4

CAUSE GROUPS

1. <i>Tuberculosis:</i>	(a) Respiratory system	..	..	84
	(b) Meninges and central nervous system	..	..	3
	(c) Intestines, Peritoneum and Mesenteric glands	..	..	2
	(d) All other Forms	..	..	15
Total				104
2.	Congenital syphilis	..	..	2
3.	All other syphilis	..	..	5
4.	Typhoid Fever	..	..	1
5.	Dysentery (Amoebic)	..	..	7
6.	Septicaemia and Pyremia	..	..	37
7.	Diphtheria	..	..	1
8.	Leprosy	..	..	1
9.	Acute infectious encephalitis	..	..	13
10.	Chicken Pox	..	..	1
11.	Infective Hepatitis	..	..	12
12.	Malaria	..	..	1
13.	Schistosomiasis	..	..	1
14.	Filariasis	..	..	1
15.	Leptospirosis	..	..	1
16.	Other Diseases due to Helminths	..	..	6 (Ascaris 5 Clonorchis 1)
17.	<i>Malignant Neoplasms:</i>			
	(1) Buccal cavity and Pharynx	..	..	1 (Nasopharynx)
	(2) Oesophagus	..	..	6
	(3) Stomach	..	..	16
	(4) Intestines (except rectums)	..	..	8
	(5) Rectum	..	..	2
	(6) Trachea, Bronchus and Lungs	..	..	48
	(7) Cervix uteri	..	..	1
	(8) Others and unspecified parts of uterus	..	..	3
	(9) Skin	..	..	1
	(10) Bone and connective tissue	..	..	3
	(11) Others and unspecified sites	..	..	95
	(12) Leukaemia and Aleukaemia	..	..	10
	(13) Lymphosarcoma and other neoplasms of lymphatic and haemopoietic system	..	..	5
18.	Benign Neoplasm and Neoplasm of Unspecified Nature	..	..	34

CAUSE GROUPS — *continued*

19.	Thyrotoxicosis	..	..	..	1
20.	Diabetes Mellitus	..	..	..	10
21.	Avitaminosis and other deficiency states	..			9
22.	Anaemias	..	..	..	11
23.	Intraventricular Haemorrhage	..	..		182
24.	Non-meningococcal Meningitis	..	..		41
25.	Epilepsy	..	..	..	2
26.	Diseases of the Eye (corneal opacity)	..			1
27.	Otitis media and mastoiditis	..	..		2
28.	All other diseases of the Nervous System	..			93
29.	Rheumatoid Arthritis (Still's Disease)	..			1
30.	Chronic Rheumatic Heart Disease	..	..		7
31.	Arteriosclerotic and Degenerative Heart Disease (Heart Failure)	..	..	..	93
32.	Other Diseases of the Heart	..	..		202
33.	Hypertension with Heart Disease	..	..		17
34.	Hypertension without mention of Heart	..			20
35.	Diseases of Arteries	..	..	..	207
36.	Lobar Pneumonia	..	..	..	18
37.	Primary, Atypical, others and unspecified Pneumonia	..	..	..	112
38.	Bronchopneumonia	..	..	..	454
39.	Acute Bronchitis	..	..	..	12
40.	Bronchitis, chronic and unqualified	..	..		26
41.	Empyema and abscess of lung	..	..		50
42.	Pleurisy	..	..	..	5
43.	All other Respiratory Diseases	..	..		167
44.	Pulmonary Haemorrhage	..	..		62
45.	Ulcer Stomach	..	..	..	18
46.	Ulcer Duodenum	..	..	..	5
47.	Gastritis and Duodenitis	..	..		2
48.	Appendicitis	..	..	..	2
49.	Intestinal obstruction and Hernia	..	..		16
50.	Gastro-enteritis and colitis	..	..		64
51.	Cirrhosis of Liver	..	..	..	44
52.	Cholelithiasis and Cholecystitis	..	..		29
53.	Obstructive Jaundice	..	..	..	4
54.	Other Diseases of Digestive system	..	..		141

CAUSE GROUPS — *continued*

55.	Acute Nephritis	..	..	..	4
56.	Chronic, others and unspecified Nephritis	..			81
57.	Calculi of urinary system	..	..		5
58.	Hyperplasia of Prostate	..	..	..	16
59.	Other Diseases of the Genito-urinary system	..			154
60.	Toxaemia of Pregnancy and puerperium	..			7
61.	Haemorrhage of Pregnancy and childbirth	..			2
62.	Abortion and sepsis	..	..	..	4
63.	Infections of skin and subcutaneous tissue	..			22
64.	Osteomyelitis and Peritonitis	..	..		1
65.	All other Diseases of the skin and Musculo-skeletal system	..	..	..	5
66.	Spina Bifida and Meningocele	..	..		3
67.	Congenital Malformations of Circulatory system (Congenital Heart Disease)	..	..		71
68.	All other congenital malformations	..	..		77
69.	Birth injuries	..	..	..	2
70.	Post-natal asphyxia and Pulmonary Atelectasis	..			302
71.	Haemolytic Disease of New-born	..	..		32
72.	Haemorrhagic Disease of Newborn	..	..		2
73.	All other defined diseases of early infancy	..			3
74.	Ill-defined diseases peculiar to early infancy and Immaturity Unqualified (Prematurity)	..			352
75.	Post-maturity	..	..	..	2
76.	Peritonitis	..	..	..	42
77.	Hirschprung's Disease	..	..		2
78.	Fungal Infections	..	..	..	5
79.	Haemorrhagic Fevers	..	..	..	1
80.	Unviable foetus	..	..	..	1
81.	Intussusception	..	..	..	1
82.	Fatty liver	..	..	..	61
83.	Myocarditis	..	..	..	14
84.	Pneumatosis	..	..	..	1
85.	Idiopathic Thrombocytopaenia	..	..		2
86.	Moniliasis	..	..	..	2

BACTERIOLOGY

<i>Throat Swabs for Culture</i>	..	..	..	..	3,969
Corynebacterium diphtheriae	..	..	..	45	
Streptococcus haemolyticus	..	..	..	154	
Staphylococcus aureus	..	..	..	460	
Monilia	..	..	..	156	
Klebsiella pneumonia	..	..	..	28	
Pseudomonas pyocyanea	..	..	..	11	
Others	..	..	..	15	
<i>Nasal Swabs for Culture</i>	..	..	..	..	608
Staphylococcus aureus	..	..	..	163	
Corynebacterium diphtheriae	..	..	..	3	
Streptococcus haemolyticus	..	..	..	10	
Monilia	..	..	..	10	
Klebsiella pneumonia	..	..	..	1	
Pseudomonas pyocyanea	..	..	..	1	
Others	..	..	..	3	
<i>Blood and Blood Clot for Culture</i>	..	..	..	..	4,778
Salmonella typhi	..	..	..	10	
Group A Streptococcus	..	..	..	5	
Group D Streptococcus	..	..	..	11	
Escherichia coli	..	..	..	7	
Pseudomonas pyocyanea	..	..	..	14	
Citrobacter	..	..	..	5	
Others	..	..	..	54	
<i>Urine for Culture</i>	..	..	..	..	11,900
Beta streptococci	..	..	..	14	
Bacitracin sensitivity test	..	..	..	14	
Alpha streptococci	..	..	..	112	
Bacitracin sensitivity test	..	..	..	112	
Non-haemolytic streptococci	..	..	..	216	
S. F. broth test	..	..	..	872	
Enterococci	..	..	..	530	
Staphylococcus aureus	..	..	..	378	
Coagulase test	..	..	..	378	
E. coli	..	..	..	2,219	
K. aerogenes	..	..	..	2,202	
Klighler's test	..	..	..	4,421	
Koser Citrate test	..	..	..	4,421	
Ps. pyocyanea	..	..	..	926	
B. proteus	..	..	..	1,305	
U.M.I. test	..	..	..	1,305	
Sensitivity tests	..	..	..	..	26,541
<i>Stool for Culture</i>	..	..	..	..	3,929
Pathogenic E. coli	..	..	..	129	
Salmonella typhi	..	..	..	5	
Organism of Salmonella group	..	..	..	9	
Salmonella group A	..	..	..	—
Salmonella group B	..	..	..	2	
Salmonella group C	..	..	..	2	
Shigella flexneri	..	..	..	18	

BACTERIOLOGY — *continued**Stool for Culture — continued*

Shigella sonnei	..	..	..	9	
Shigella hoydii	..	..	..	1	
Staphylococcus aureus	..	..	..	2	
Biochemical tests	..	..	..	46	
Sensitivity tests	..	..	..	..	689
Blood for Widal	..	..	..	..	1,685
Blood for Weil-felix	..	..	..	..	1,685
Blood for clot cultures	..	..	..	..	1,685
Blood for Vi test	..	..	..	..	7
Blood for Paul Bunnell	..	..	..	..	124
Blood for Brucella test	..	..	..	..	66

MISCELLANEOUS SECTION

Total Number of Sputum Received for Culture 3,605

Organisms isolated

Beta haemolytic streptococcus	..	..	84
Stapy. aureus (Coagulase positive)	..	..	168
B. friedlander	..	..	30
Candida sp. ..	..	..	32
B. coli	..	..	71
Ps. cyocyanea	..	..	210
B. proteus	..	..	55
Strep. pneumoniae	..	..	—
A. aerogenes	..	..	91
B. paracolon	..	..	3
Pneumococus	..	..	2
B. alkaliques	..	..	79

Total Number of Ear Swabs and Pus for Culture 7,133

Organisms isolated

Beta haemolytic streptococcus	..	..	325
Strep. faecalis	..	..	16
Alpha strep. ..	..	..	55
Staph. aureus	..	..	2,469
Strep. pneumoniae	..	..	2
Ps. pyo.	..	..	879
B. proteus	..	..	544
B. coli	..	..	525
A. aerogenes	..	..	453
B. paracolon	..	..	59
Staph. albus	..	..	143
B. alkaligenes	..	..	96
K.L.B.	..	..	5
B. friedlander	..	..	3
Cl. melchii	..	..	3
Monilia	..	..	3
Anaerobic H.S.	..	..	2

MISCELLANEOUS SECTION — *continued*

Total Number of Pleural Fluid for Culture 1,462

Organisms isolated

Beta haemolytic strep.	..	..	..	1
Strep. faecalis	..	..	..	1
Staph. aureus	..	..	..	35
Strep. pneumoniae	..	..	..	—
Ps. Pyo	..	..	..	4
B. proteus	..	..	..	9
B. coli	..	..	..	5
A. aerogenes	..	..	..	10
Staph. albus	..	..	..	6
Alpha strep.	..	..	..	5
B. alkaligenes	..	..	..	6

Total Number of Cerebro-Spinal Fluid for Culture .. 2,843

Organisms isolated

Cryptococcus	..	..	..	—
Beta haemolytic strep.	..	..	..	1
Alpha	..	..	..	3
H. influenzae	..	..	..	—
Meningococcus	..	..	..	2
Strep. pneumoniae	..	..	..	8
Staph. aureus	..	..	..	9
B. coli	..	..	..	2
Ps. Pyo	..	..	..	7
Staph. albus	..	..	..	1
B. alkaligenes	..	..	..	5
A. aerogenes	..	..	..	7

Total Number of Vaginal, Cervical and Urethral Swab .. 992

Organisms isolated

Beta haemolytic strep.	..	..	..	59
Alpha haemolytic strep.	..	..	..	55
Staph. aureus	..	..	..	266
N. Gonorrhoeae	..	..	..	17
Enterococcus	..	..	..	45
B. proteus	..	..	..	59
Ps. pyo	..	..	..	63
B. coli	..	..	..	314
A. aerogenes	..	..	..	138
Candida sp.	..	..	..	5
S. typhi	..	..	..	—
B. alkaligenes	..	..	..	24
Staph. albus	..	..	..	39
Cl. melchii	..	..	..	2
B. paracolon	..	..	..	12

MISCELLANEOUS SECTION — *continued*

<i>Total Number of Eye Swabs for Culture</i>				..	..	1,141
<i>Organisms isolated</i>						
H. influenzae	..	..	..	2		
Beta haemolytic strep.	..	..	..	7		
Strep. pneumoniae	..	..	..	3		
Staph. aureus	..	..	..	97		
B. proteus ..	..	..	..	10		
Ps. pyo ..	..	..	..	43		
A. aerogenes	..	..	..	22		
B. coli ..	..	..	..	9		
B. alkaligenes	..	..	..	19		
Alpha strep. ..	..	..	..	3		
B. paracolon	..	..	..	1		
B. subtilis cultures	..	..	..	..	48	
Cough plates	..	..	..	..	8	
Biopsy tissue	..	..	..	..	32	
Proteus ..	..	..	2			
B. coli ..	..	..	3			
Staph. aureus	..	..	5			
Mortuary specimens (organ and swabs)	..	..	..	..	62	
Staph. aureus	..	..	6			
A. aerogenes	..	..	8			
Ps. pyo ..	..	..	9			
B. proteus	..	..	5			
Staph. albus	..	..	4			
Stomach wash-out	..	..	..	..	20	
B. coli ..	..	..	4			
Aerogenes	..	..	6			
Bile ..	..	..	..	..	15	
Alpha strep.	..	..	2			
B. coli ..	..	..	4			
Ps. pyo ..	..	..	1			
Air samples ..	..	..	..	..	8	
Bones ..	..	..	..	..	21	
<i>Mycological Investigations</i> ..	..	..	..	..	1,407	
(a) Culture for Fungi (See Appendix A)	..	..	599			
(b) Direct microscopic examination	..	..	599			
(c) Sensitivity Tests ..	..	..	21			
(d) Biochemical Reactions ..	..	..	188			

1,407

MYCOLOGY SECTION
STRAINS OF FUNGI ISOLATED

	Skin Scrap- ings	Nails	Sputum and Throat Swab	Pus	Others Sources	Total
Number of specimens ..	126	20	206	62	185	599
Trichophyton tonsurans ..	6	..	..	..	..	6
Trichophyton rubrum ..	2	..	..	..	..	2
Trichophyton verrucosum ..	3	..	..	..	..	3
Trichophyton violaceum ..	3	..	..	..	..	3
Microsporum cavis ..	1	..	..	..	..	1
Gladosporium species ..	1	..	..	..	..	1
Tinea Vesicolor ..	2	..	..	..	..	2
Hormodendrum species ..	16	..	1	..	1	18
Phialophora verrucosa ..	2	1	..	..	..	3
Geotrichum candidum ..	4	1	..	1	..	6
Candida albicans ..	..	..	4	..	..	4
Candida tropicalis ..	..	..	16	2	2	20
Candida Krusei ..	4	2	8	..	..	14
Candida parakrusei ..	12	1	8	3	1	25
Candida stellatoidea ..	5	3	90	3	2	103
Candida guilliermondi ..	3	1	..	1	..	5
Candida species ..	8	1	2	1	..	12
Cryptococcus ..	..	..	..	..	CSF 39	39
Aspergillus niger ..	8	5	6	..	3	22
Aspergillus fumigatus ..	..	1	..	2	5 P.M. 4 eye	12
Aspergillus species ..	3	2	7	..	..	12
Aspergillus flavus ..	2	..	..	1	1	4
Aspergillus Candidus ..	1	..	1	1	..	3
Aspergillus species ..	3	..	1	1	..	5
Sporotrichum schenckii ..	..	..	..	1	..	1
Helminthosporium ..	6	1	..	1	..	8
Penicillium species ..	11	1	9	4	1	26
Red yeast ..	5	..	..	..	..	5
Black yeast ..	1	..	..	..	..	1
Fusarium ..	1	..	..	1	..	2
Nigrospora ..	1	..	..	..	..	1
Saccharomyces ..	..	..	..	1	..	1

MYCOLOGY SECTION — continued

				Total	E. histolytica	E. histolytica (Small race)	E. Coli	Endolimax nana	Dientamoeba fragilis	Trichomonas hominis	Balantidium coli	Giardia lamblia
Stool .. ..	..	Culture ..	..	1,921	176	99	24	24	5	60	2	..
		M.E. ..	..	1,927	108	..	..	..	..	22	2	49
Rectal swab ..	..	Culture ..	..	11	..	..	..	..	..	..	..	..
		M.E. ..	..	11	..	..	..	..	..	..	..	..
Pus .. ..	..	Culture ..	..	65	3	..	..	..	..	..	..	..
		M.E. ..	..	65	3	..	..	..	..	..	..	..
P.M. specs. ..	..	Culture ..	..	4	1	..	..	..	..	..	..	..
		M.E. ..	..	4	1	..	..	..	..	..	..	..
Miscellaneous ..	..	Culture ..	..	35	..	..	..	..	..	..	..	..
		M.E. ..	..	35	..	..	..	..	..	..	..	..

S.EL 650
CRP 917
ASOT 723

Toad test Positive .. 237 Gravindex .. Positive .. 29
Negative .. 326 Negative 39

Sterility Biological Preparations 1,402
Blood /Plasma 234
Bones 90
Surgical Dressings/Instruments, etc. .. 72

Potency Test 43
Phenol Co-Efficient 2
Serum Penicillin Level 1

Darkground Illumination 36
Culture: Leptospira 28
Leishmania 1
Toxoplasma 3
Torula 1
Trichomonas vaginalis .. 1

ANIMAL INOCULATIONS

				Rabbit	G. pig	Mouse	Hamster
<i>Experimental:</i>							
Amoeba	..	..	..	..	..	..	2
Leptospira	..	..	..	..	4	..	..
Mosquito Antigen	..	..	..	3	3	..	1
Toxoplasma	..	..	..	..	..	13	3
K.L.B.	..	..	..	..	2	..	..
<i>M. Tuberculosis:</i>							
Positive Culture	..	..	..	..	1	..	..
Sputum	..	..	..	..	1	..	..
Vaginal discharge	..	..	..	..	1	..	..
C. S. F.	..	..	..	..	3	..	..
Endometrial Curettage	..	..	..	..	2	..	..
Pericardial Aspirate	..	..	..	..	1	..	..
Pleural fluid	..	..	..	..	2	..	..
Gastric lavage	..	..	..	..	1	..	..

Clinical Examination:

Stool —	Occult Blood	..	..	..	1
Urine —	F.E.M.E. Sugar	..	..	..	19
	Albumin	..	..	..	19
	M.E.	..	..	..	10
	Bile	..	..	..	1
	Culture for T. hominis	..	..	..	1
Smear—	Treponema pallidum	..	..	..	4
	Toxoplasma	..	..	..	3
	Paragonimus westermani	..	..	..	2
	Trichomonas	..	..	..	5
	Monilia	..	..	..	4
	Microfilaria	..	..	..	2
Sputum	A.F.B. Positive	..	..	..	27
	Negative	..	..	..	898

Stock Culture

ENTAMOEBA histolytica	—	1 strain
BALANTIDIUM coli	—	1 strain

Autoimmune Thyroid Antibodies

Positive	..	..	61
Negative	..	..	221

SEROLOGY SECTION

Total number of tests performed on blood and C.S.F.	101,124
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Blood

Total number of V.D.R.L. Test	80,272
Number of Positive	2,494
Number of Negative	77,778
Total number of KAHN Test (Qualitative)	..	..	13,301
Number of Positive ..	..	..	2,576
Number of Negative	..	..	10,725
Total number of KAHN Test (Quantitative)	..	..	20
Total number of Wassermann Reaction	..	..	3,942
Number of Positive ..	..	..	1,411
Number of Negative	..	..	2,513
Anti-complementary	..	..	18
Total number of Gonococcus Complement Fixation Test	..	..	742
Number of Positive ..	..	..	163
Number of Negative	..	..	571
Anti-complementary	..	..	8
Total number of Rose-Waaler for Rheumatoid Factor	..	..	92
		Total ..	98,369

Cerebrospinal Fluid (C.S.F.)

Total number of V.D.R.L. Test	..	..	2,507
Number of Positive ..	..	..	108
Number of Negative	..	..	2,399
Total number of Wassermann Reaction	..	..	37
Number of Positive ..	..	..	9
Number of Negative	..	..	28
Total number of Lange's Colloidal Gold Curve	..	..	211
		Total ..	2,755

Total number of Paying Cases from Private Clinics and Hospitals, etc.	77
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MEDIA

Agar Media:

Nutrient Agar	3,000,000 c.c.
Blood Agar Plate	1,930,000 c.c.
Eosin Methylene Blue Agar Plate	605,000 c.c.
Chocolate Plate	16,500 c.c.
Chlamydospore Agar	7,000 c.c.
Kliger Agar Slant	66,500 c.c.
Sabouraud Agar	48,500 c.c.
Agar Miscellaneous	4,000 c.c.
Total ..	<u>5,677,500 c.c.</u>

Broth Media:

Brewer's Broth	35,000 c.c.
Blood Copper Tellurite Broth	9,000 c.c.
Blood Culture Broth	380,000 c.c.
Filde's Peptic Broth	100,000 c.c.
Hartley's Broth	215,000 c.c.
Koser's Citrate Broth	60,000 c.c.
Nutrient Broth	300,000 c.c.
Ox Gall Broth	10,000 c.c.
Sabouraud Broth	9,000 c.c.
S.F. Broth	4,000 c.c.
Selenite F. Broth	60,000 c.c.
Stuart's medium	10,000 c.c.
Tryptophane Broth	10,000 c.c.
Tetrathionate Broth	50,000 c.c.
Urea Motility Indole Medium	30,000 c.c.
Miscellaneous Broth	38,000 c.c.
Total ..	<u>1,320,000 c.c.</u>

Mear Media:

Robertson's medium	<u>90,000 c.c.</u>
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Serum Media:

Amoeba medium	24,000 c.c.
Hiss Serum Base	10,000 c.c.
Loeffler Slope Medium	2,000 c.c.
Hiss Serum Glucose	1,000 c.c.
Hiss Serum Mannite	1,000 c.c.
Hiss Serum Maltose	1,000 c.c.
Hiss Serum Starch	1,000 c.c.
Hiss Serum Sucrose	1,000 c.c.
Hiss Serum Dextrin	1,000 c.c.
Total ..	<u>42,000 c.c.</u>

Sugar Media:

Plain Pepton Broth	40,000 c.c.
Glucose Peptone Broth	4,000 c.c.
Lactose Peptone Broth	4,000 c.c.
Maltose Peptone Broth	4,000 c.c.
Mannite Peptone Broth	4,000 c.c.
Sucrose Peptone Broth	5,000 c.c.
	<u>60,000 c.c.</u>

Saline:

Physiological Saline	..	..	..	1,095,000 c.c.
Buffered Saline	..	..	..	64,000 c.c.
Total				1,159,000 c.c.

Smears

The re-organisation of the Central Laboratory resulted in the Bacteriology Section taking over the smears formerly done by Medical Unit I.

During the months of November and December the following smears were done:

<i>Smears</i>	<i>Number of smears</i>	<i>Number of positive readings</i>
Sputum for A.F.B.	925	27
Cerebro-spinal fluid	190	22
Throat	23	8
Vaginal	21	15
Sputum for pathogens	19	13
Pleural fluid	15	4
Eye	13	5
Urethral	10	2
Ear-clip for A.F.B.	6	0
Miscellaneous (anal, ascitic fluid, knee effusion, nose, mouth, pericardial effusion, etc.)	33	9
Total	1,255	105

Bacteriological Laboratory

The following is the report on the work done in the Bacteriological Laboratory, City Hall, Singapore, during the year 1965.

Public Health Specimens:

	1964	1965
1. From Health Officers	2,373	2,120
2. From M.O.'s i/c Staff	1,689	1,531
3. From Outpatient Dispensaries	96	25
4. From Cleansing Department	46	38
5. From Sewerage Department	25	11
6. From Maternal and Child Health Clinics	9,083	6,729
7. From Middleton Hospital	26,663	29,587
8. From Johore and Tebrau Water Works	—	164
9. From Private Practitioners	434	713
10. From Others (Cold Storage Creameries, and other manufacturers)	181	137
11. Special specimens for Confirmatory tests, etc.	2,236	1,743
12. Rats from Plague Prevention Department	2,940	2,047
13. Ecto-parasites from Plague Prevention Department	2,115	2,347
Total	47,881	47,192

Water Samples:

14. Public Utilities Board, Water Department	12,469	13,284
15. Public Swimming Pools	3,894	3,845
16. Miscellaneous Sources	470	595
17. Algae and other samples	105	86
Total ..	16,938	17,810
GRAND TOTAL ..	64,819	65,002

The shortage of staff had compelled this laboratory to curtail certain examinations at various periods of the year.

Malaria

Of 812 blood films examined for malarial parasites, four (4) were found to be infected with *Plasmodium vivax* and twenty (20) with *Plasmodium falciparum* parasites.

Tuberculosis

Fifty-eight (58) specimens were examined.

	<i>Positive for AFB</i>	<i>Negative for AFB.</i>	<i>Total</i>
1. Sputum	5	26	31
2. Milk	1	26	27
Total ..	6	52	58

Acid-fast bacilli were found by direct smear in one sample of Fresh Milk submitted for routine monthly examination in August 1965, by the Cold Storage Creameries Ltd., Singapore. Further samples were then submitted but they were all found negative for acid-fast bacilli.

<i>Salmonelia</i>	<i>Positive</i>	<i>Negative</i>	<i>Total</i>
Faeces for culture	447	6,064	6,511
(S. typhi isolated 312)			
(S. paratyphi "B" isolated .. 8)			
(S. typhi-murium isolated .. 2)			
(S. Group "B" isolated .. 67)			
(S. Group "C" isolated .. 18)			
(S. Group "E" isolated .. 38)			
(S. Group "G" isolated .. 2)			
Urine for culture	4	2,548	2,552
(S. typhi isolated 4)			
Total ..	451	8,612	9,063

<i>Salmonella</i> (Widal Reaction)			Positive	Negative	Total
Agglutination with <i>Sal. typhi</i>	..	..	197	741	938
Agglutination with <i>Sal. paratyphi</i> "A"	..	..	5	635	640
Agglutination with <i>Sal. paratyphi</i> "B"	..	..	9	631	640
Agglutination with <i>Sal. paratyphi</i> "C"	..	..	14	626	640
Agglutination with Vi antigen	..	..	66	894	960
Blood clot culture	..	..	76	564	640
(<i>S. typhi</i> isolated	..	..	76)		

A total of 358 persons were examined for typhoid-carrier state. In each case three specimens were examined — blood, faeces and urine. *Salmonella* belonging to Group "C", "E" and "G" were isolated from the faeces of three of them.

There was an outbreak of Typhoid in February 1965, causing an increase in the number of specimens. The cases were mostly amongst pupils of one school. The positive cultures were forwarded for phage-typing.

Typhus (Weil Felix Reaction)

Agglutination with <i>B. Proteus</i> OXK	..	..	1	637	638
Agglutination with <i>B. Proteus</i> OX19	..	..	—	638	638
Total			368	5,366	5,734

Amoebic Dysentery

In all, 3,334 specimens of faeces were examined for amoebae.

<i>E. histolytica</i> was present in	..	..	..	114 specimens
<i>E. coli</i> was present in	..	..	..	4 specimens
<i>E. nana</i> was present in	..	..	..	1 specimen
Negative	..	..	..	3,215 specimens
Total			..	3,334 specimens

Shigella

A total of 6511 specimens of faeces were cultured.

<i>Shigella Flexneri</i> was isolated from	..	..	..	114 specimens
<i>Shigella Sonnei</i> was isolated from	..	..	..	126 specimens
<i>Shigella Boydi</i> was isolated from	..	..	..	5 specimens
<i>Shigella Flexneri</i> and <i>Sonnei</i> (Mixed infection) was isolated from	..	..	..	3 specimens
Negative	..	..	..	6,263 specimens
Total			..	6,511 specimens

V. Cholerae

Only 3 specimens of faeces were submitted for examination and all were negative for *V. Cholerae*.

Fæces for Ova and Intestinal Parasites

In 2,827 specimens ova, larvæ, etc. were present, 5,745 being in a total of 8,572 specimens received. Multiple infection was fairly common.

Ankylostome ova found in	..	739
Ascaris ova found in	..	1,180
Trichuris	..	1,692
Oxyuria ova found in	..	24
Strongyloides larva found in	..	8
Lambliia cysts found in	..	120
Trichomonas found in	..	22

				<i>Positive</i>		<i>Negative</i>		<i>Total</i>	
				<i>1964</i>	<i>1965</i>	<i>1964</i>	<i>1965</i>	<i>1964</i>	<i>1965</i>
<i>Diphtheria:</i>									
1.	Throat swabs	..	..	253	239	3,246	3,120	3,499	3,359
2.	Nasal swabs	..	..	62	69	607	603	669	672
3.	Ear swabs	..	..	15	41	287	420	302	462
4.	Sore swabs, etc.	..	..	13	14	96	77	109	91
Total				343	364	4,236	4,220	4,579	4,584

Miscellaneous Examinations:

1.	Pus for Gonococci (29 positive)	..	..	..	484
2.	Blood for Total White Cell Count	..	..	..	6
3.	Blood for Differential Count	..	..	..	13
4.	Blood for Microfilaria	..	..	..	3
5.	Blood for Culture	..	..	..	3
6.	Pathological Exudates for General Examination	..	..	..	8
7.	Urine for General Examination	..	..	..	3,004
8.	Fæces for Occult Blood	..	..	..	5
9.	Sundried Humus and Sludge	..	..	..	41
10.	Final Effluent	..	..	..	4
11.	Wash water from Nightsoil Pails	..	..	..	35
12.	Contents from Chemical Closets of Aircrafts	..	..	..	465
13.	Carbonated Drinks	..	..	..	10
14.	Still Drinks	..	..	..	8
15.	Ice Cream, Popsicles, etc.	..	..	..	638
16.	Milk and milk products	..	..	..	37
17.	Condensed Milk	..	..	..	4
18.	Bottles for sterility tests	..	..	..	11

19. Cooked Food	20
20. Canned Food	21
21. Moon cakes	1
22. Sugar	4
23. Fruits	1
24. Dead flies for Salmonella	3
25. Water for Salmonella (Tap water — 3, Well water 7)	10
26. Faeces for Pathogenic E. coli	19
27. Disinfectant	1

Plague

2,047 rats were dissected; none of them showed any signs of Plague infection.

2,347 ecto-parasites were combed out from the rats and examined.

The species and distribution of the Rats and Ecto-parasites are given in the attached table.

Internal organs from 25 dissected rats and also 8 live rats were collected by a research student from the Department of Zoology, University of Singapore.

4 live rats, infected with *Trypanosoma lewisi* were sent to the Department of Parasitology, and another 8 to the Department of Zoology, University of Singapore. A further 4 live rats were also sent to the Department of Zoology.

Water Samples

The condition of tap water was satisfactory throughout the year. The Scudai water works came into use in 1965. This has caused an increase in the number of specimens examined.

Samples received from sources other than the Water Department of the Public Utilities Board and the Public Swimming Pools were as follows:

Singapore Swimming Club	240
Tanglin Club	78
Chinese Swimming Club	62
Connell House	11
Singapore Island Country Club	49
American Club	58
Other sources	97

PLAGUE PREVENTION UNIT

The following is a return of Rats caught for the Year, 1965

Source	R Norvegicus		R Rattus		R Concolor		M Musculus		Croci- dura	Total Rats	Total Preg. Rats	Total Dead Rats	Fleas X. Cheo- pies	Fleas Others	Total Fleas	Mite	T. Lewisi		Average Fleas per live Rat	Remarks
	M.	F.	M.	F.	M.	F.	M.	F.									+ ve	- ve		
Singapore River and Environs ..	323	596	13	25	47	74	91	81	63	1,313	32	1	1,909	..	1,909	241	..	..	1.46	..
Public buildings quarters, etc. ..	7	15	33	62	26	35	30	56	20	284	1	42	63	..	63	107	..	..	0.26	
Port Area ..	14	15	28	72	16	9	..	2	..	156	..	..	19	..	19	8	..	..	0.12	
Ships ..	..	1	39	50	..	..	63	141	..	294	..	294	..	..	..	..	..	..	..	Fumigated HCN.
Total ..	344	627	113	209	89	118	184	280	83	2,047	33	337	1,991	..	1,991	356	..	..	..
Grand Total ..	971		322		207		464		83	2,047	33	337	1,991	..	1,991	356	..		..
Pregnant Rats (in- cluded in totals above) ..	..	24	..	1	..	..	..	8	..	..	33	..	..	..	..	..	..	..	..

All the Rats were dissected and none was found infected with Plague.
Internal organs from twenty-five rats, and eight live rats were collected by Miss S. K. Gatha, University of Singapore.
Eight live rats infected with T. Lewisi, and four live rats were supplied to the Department of Zoology, University of Singapore.
Four live rats infected with T. Lewisi were supplied to the Department of Parasitology, University of Singapore.

Chapter Thirty-two

SINGAPORE HOSPITAL RESERVE

ADMINISTRATION

This Unit is controlled and administered by the Principal Matron — acting for the Deputy Director of Medical Services (Hospitals). She is assisted by a Training Officer and clerical staff.

S.H.R. Strength

The strength of the Reserve Force stood at 631 in the beginning of 1965. The number rose to 667 as at 31st December, 1965.

For the whole of 1965 there were 63 enrolments and 22 disenrolments.

Trained Reservists

Twenty-nine (29) nursing auxiliaries have qualified as Trained Reservists for the year. The total number of Trained Reservists stood at 480 at close of 1965. Each Reservist attends a 20-hour Refresher Course at the General Hospital annually.

The remaining 187 nursing auxiliaries are still under the different stages of training, viz.

- (i) To attend a ten-period First Phase Training.
- (ii) Attend eighty hours training at the General Hospital.
- (iii) To attend a ten-period Class I.
- (iv) Attend twenty hours training at the General Hospital.
- (v) To attend a ten-period Class II.

Classes and Examinations

Classes were conducted by the Singapore Hospital Reserve Volunteer Instructors in English, Malay and Mandarin, viz.

- (a) First Phase Training.
- (b) Class I.
- (c) Class II.
- (d) Refresher Course for Leaders

The above classes were held at the Singapore Hospital Reserve Classroom. Examinations were held on completion of the classes except classes for (a) and (d) of above. The Refresher Course for leaders of Singapore Hospital Reserve was conducted by the Training Officer.

Sisters and Staff Nurses from the General Hospital, Institute of Health and Kandang Kerbau Hospital conducted the various Examinations held in May and October, 1965.

Altogether nine classes were conducted in the Singapore Hospital Reserve premises for the whole year.

S.H.R. 13th Anniversary

A grand Social and Dance was held at the Adelphi Hotel on 12th November, 1965 to commemorate the Thirteenth Anniversary of the Singapore Hospital Reserve. Principal Matron, Miss Lim Kwee Neo graced the occasion. All proceeds from the function will be donated to the Singapore Medical Progress Fund.

S.H.R. Annual Picnic.

The Singapore Hospital Reserve held its Annual Picnic on 12th December, 1965 at Ponggol in which S.H.R. members and friends attended. It was a great success.

PART IV

DEPARTMENT OF CHEMISTRY

Chapter Thirty-three

DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF DANGEROUS AND HAZARDOUS MATERIALS

ADMINISTRATION

In July a car park was built in the compound of the Department and towards the end of the year the cork tile floorings of four laboratories were replaced with cement rendering.

Although a revote was requested, the gas chromatograph costing nearly \$15,000 arrived near the end of the year in time to be paid from the current year's Development Estimate.

Staff

The staffing position at the end of the year is shown in Appendix I. The Deputy Chief Chemist and two recently appointed Chemists, Messrs. Ng Seng Choew and Chia Hong Kuan attended the Political Study Course arranged for Senior Officers by the Government. Mr. Theng Chye Yam, Chemist, was awarded a Fellowship under the Colombo Plan Technical Co-operation Scheme. In February he left for Australia for training.

Throughout the year one post of Assistant Inspector of Dangerous Materials remained unfilled owing to lack of suitable applicants.

During the year four Laboratory Technicians resigned to further their studies. Two of the vacant posts arising were filled near the end of the year. One Laboratory Technician was released for service with the Armed Forces throughout the year.

Transfers during the year involved two General Clerical Officers, one Laboratory Attendant and one Peon. This year there was one more post of General Clerical Assistant which was filled in August.

Mr. K. Thambiah, Special Grade Laboratory Attendant retired on the age limit, after 36 years, service. Consequently Mr. G. Marimuthu was promoted to Special Grade Laboratory Attendant. Two Laboratory Attendants, Grade II were also promoted to Grade I and three Laboratory Attendants, Grade III to Grade II. Six Laboratory Attendants, Grade III were appointed.

Visits and Lectures

In March Dr. Erb Na Bangxang, Chief Medical Officer of Health, Thailand, had a discussion with the Chief Chemist who supplied him with a copy of the proposed standards for trade effluents to be discharged into rivers.

During the year, groups of students from Raffles Girls School, Montford Secondary School, Queenstown Technical School, Crescent Girls School,

Swiss Cottage Secondary School, Victoria School, Tanjong Katong Secondary School, Gan Eng Seng School, Convent of the Holy Infant Jesus and Beatty Secondary School visited the Department of Chemistry.

Lectures on Forensic Science as an aid to Police Investigations were given to detective trainees on four occasions by the Senior Chemist, Mr. Lim Chin Hua and on one occasion by Mr. Phang Sing Eng, Chemist. After the lectures they were also shown the work in the forensic section.

Work of the Department

There were 34 attendances in Courts to give expert evidence as compared with 35 attendances in 1964. Five attendances were by the Document Examiner and the others by the Chemists.

In connection with document examination, 581 photographs were made to clarify certain reports.

This year the number of samples analysed and/or examined was 47,055 compared with 44,484 for 1964. The number of samples from the various sources of origin for the two years were as follows:

	1964	1965
Customs and Excise Department	7,637	9,021
Medical Department	3,734	4,079
Police Force	2,764	3,004
Water Department, Public Utilities Board ..	19,358	20,103
Public Works Department	3,168	2,939
Parks and Recreation Division	3,953	3,869
Other Government Departments	1,208	1,243
Commercial firms, Statutory Boards, etc. ..	2,662	2,797
Total ..	<u>44,484</u>	<u>47,055</u>

There was a decrease in samples from two sources but an increase from the others. The greatest increase in samples was from the Customs.

The total samples analysed and/or examined this year as compared with those for the past five years is shown on the chart on page 346. A summary of the work of the various sections is shown in the table in Appendix II on page 348.

Finance

Under Special Expenditure, an electrical driven saw, a viscometer and an ultra-violet lamp were bought. The total cost was approximately \$1,519.

The amount of fees collected was approximately \$185,442.50 as compared with \$192,981 collected during the previous year. Details are shown below:

	1964	1965
	\$ c.	\$ c.
Works done for Public Utilities Board	73,048 00	83,986 00
Flash Point Test	15,220 00	15,780 00
Methylation	526 00	2,307 00
Ship Inspection	89,370 00	68,327 50
Miscellaneous	14,817 00	15,042 00
Total ..	<u>192,981 00</u>	<u>185,442 50</u>

The decrease in revenue was due mainly to less number of vessels inspected for freedom of inflammable petroleum vapour.

The assistance given by the Deputy Chief Chemist, Senior Chemist, Document Examiner and those Chemist (Messrs. Phang Sing Eng, M. C. Dutt, and Chua Teck Hock) to the Chief Chemist in making his Annual Report are gratefully acknowledged.

FORENSIC SECTION

This section showed an increase over that of 1964 in the total number of exhibits examined although there was a slight decrease in the number of cases. The figures were 3,584 exhibits as compared with 3,065 in 1964 and 647 cases as compared with 660 in 1964.

In spite of the general increase of exhibits there were two types of exhibits which showed marked decrease. These were in arson and vehicles cases, the drop being from 52 to 19 and from 47 to 28 respectively. There was also an unusual feature this year in that no adulterated liquor exhibits was submitted.

There were ten instances of visits to scenes of crime made by officers of this Department at the request of the Police. These visits were made both during and outside office hours, including, on one occasion in the very early hours of the morning. Of the sites visited, two were those of explosions which were strongly suspected to be the work of saboteurs.

For the promotion and maintainance of close liason between this Department and the Police the attendance of the Deputy Chief Chemist to the monthly conference of police officers at the Criminal Investigation Department of the Police Force was continued throughout the year.

Arson

Of the 13 cases of arson, nine were confirmed to be arson when inflammable mineral oil such as kerosene or petrol was isolated from the exhibits submitted.

Most of these exhibits were from attap houses whose combustibility was so well known, particularly the roofing which seemed as usual, the favourite target of many would-be arsonists. In some of these cases, the exhibits submitted included oil soaked cloth rolled around one end of a stick and therefore obviously meant to be thrown from a distance.

There was one case of a burnt temporary ceremonial arch. No oil however was detected although from the nature of the case arson was strongly suspected.

One outstanding case was that of a fire in a well known music store which was set ablaze by a dismissed employee who also deliberately killed himself in the flames, right in front of witnesses. Tins from the scene and identified as belonging to the deceased, were found to contain petrol.

Blood and Semen

Blood and semen exhibits showed a slight increase over the previous year.

Of the total of 757 exhibits, 610 were for the examination of blood, and of these 140 were found to give negative results when examined.

While the vast majority of these exhibits were submitted by the Police there were 41 exhibits for blood examinations submitted by the three sections of the Armed Services.

As usual most of these exhibits consisted of clothing and knives of various sorts which were submitted in order to confirm that the stains present were human blood. Wherever it might be of help to the investigating officer, grouping of bloodstains was determined as well. Out of those exhibits giving positive human blood results, about one half was grouped.

Other exhibits examined were, a bicycle chain, a spear head, a baling hook, a broken bottle neck, a revolver, a motorcycle stained with blood from a victim who was caught eloping with a housewife and stabbed by the aggrieved husband, and a motor car which was suspected to have been used for disposing off the dead body of a man killed in a gang clash.

One unusual case was for the confirmation of some blood stains taken from the ground in a kampong as being pig's blood. The pig was slashed by somebody who objected to its wandering into his compound.

Of the 147 exhibits examined for seminal stains, one-third were successfully proved to be so stained by the isolation and identification microscopically of the spermatozoa.

One unusual exhibit was a motor car where seminal stain was found on the back seat.

Chandu and Opium

The number of these exhibits increased substantially over that in the last year.

As in previous years practically all the exhibits were submitted by either the Singapore Police or the Customs and Excise Department. The Police exhibits were usually the small two-hoon packets of chandu, or prepared opium ready for smoking, opium smoking pipes, and the residue from such smoking, all of which were seized from opium smoking dens following raids. Sometimes the smoking utensils, viz., scrapers, scissors, rags and weighing scales were submitted as well.

The exhibits from the Customs and Excise Department were mostly raw opium. Sometimes these were in very large quantities being seizures from ships, etc.

In these seizures of raw opium, the moisture and morphine content were frequently determined as well in order to assess their value as a pharmaceutical commodity. Fifty such assays were carried out.

Less than 1 per cent of the total number of exhibits were found to be not chandu or opium as were originally suspected.

Drugs

Drugs exhibits also showed a considerable increase over last year's.

As usual the majority of these were morphine powder, seized from narcotic injecting dens, and indian hemp, seized mostly from individuals. There were 22 and 21 cases of these respectively.

The exhibits examined for morphine consisted of small single dose packets of powder, hypodermic syringes and needles, small pieces of spongy material and china spoons used for dissolving the powder into solution and boiling it prior to injecting.

In one case a number of ampoules seized from the house of a man known to the Police as a dealer in opium, were found to contain only adrenaline instead.

A considerable number of cases, each involving a large number of exhibits, were those resulting from raids by the Police in conjunction with the Inspector of Poisons of the Ministry of Health against unlicensed dealers in poisons — usually the Chinese traditional medicine shops.

There was one case also of a large number of exhibits seized from a suspected abortionist's house. Among the exhibits were ergot, quinine, chloramphenicol, etc.

In one case 100 ampoules seized from a man at the harbour was found to be injections of strychnine sulphate.

There was one investigation into the nature of some tablets found in the countryside and suspected to have been abandoned by armed foreign infiltrators. These were found, on analysis, to be vitamin B1 plus aspirin, phenacetin and caffeine.

One sample of poppy seeds and one of poppy capsules from imported consignments were submitted respectively, by the Environmental Health Section of the Ministry of Health and by the Customs and Excise Department for checking the morphine content. On analysis the morphine content was found to be less than 0.2 per cent and these substances were therefore not scheduled dangerous drug.

Firearms

Although the number of exhibits connected with firearms was less than that of last year, the number of cases was slightly more (168 exhibits in 24 cases for 1964).

As usual the exhibits were submitted either for recent firing of firearms or presence of residues on clothing and determination of range of firing, or the microscopical matching of fine lines on bullets and cartridge cases to establish the particular firearm which fired them. When matching of fine lines on bullets or cartridge cases occurred, photographs were made for presentation in courts.

Exhibits for the presence of powder residues included skins (taken from the deceased by the Pathologist) hairs and swabbings taken from around the wounds.

There were four submachine guns submitted by the army for examination of their erased serial number.

Among the rather unusual cases examined was one where a pair of shorts from an accidental shooting, was submitted to establish the range and the angle of firing. This case was particularly interesting in that the conclusion obtained from the evidences did not appear to tally with the statements made by various witnesses to the accident.

In one case a gangster was shot six times by three detectives when he attacked an inspector who was searching his house. Six bullets recovered from his body had to be examined to connect each of them with each of the three revolvers.

Gold

There were only two Customs' cases involving gold. The first case involved two exhibits comprising 18 yellow coloured coins. Gold was confirmed in these coins.

In the second case one exhibit consisting of 35 bars of yellow metal was submitted. Samples taken from some of these bars were found to be gold of 99.9 per cent purity.

Liquors

The number of illicit liquor exhibits received this year was about twice that of the previous year although the number of cases was rather less.

These were all submitted by the Customs and consisted of both the distilled spirit and the yet undistilled fermented mash usually seized from illicit distilleries in the country-side. All of these were found to have alcoholic contents of more than 2 per cent proof spirit. Hence they were "Intoxicating Liquors" under the Customs Ordinance and therefore dutiable.

Tobacco

There was only one Custom's case involving tobacco this year. This consisted of four exhibits of well known brands of cigarettes and pipe tobacco connected with evasion of duty. These were analysed and confirmed to be tobacco for the benefit of the court.

Vehicles

As mentioned earlier the number of vehicles received showed a decrease for this year.

Out of the 28 exhibits, four were submitted by the Registrar of Vehicles and the remainder by the Police.

Most of these vehicles were submitted for investigation into the chassis, engine or registration numbers which had been tampered. On a number of cases the erased original numbers were successfully or partially redeveloped.

There was one motor car which was found to be stained with acid. There were also two others with badly damaged paintwork but on which no acid was detected. In these cases the use of organic paint remover was

strongly suspected. Owing to the volatile nature of such material, the only clue left on the cars at the time of submission was the presence of waxy substance which could have been a component of the paint remover.

There were a number of examinations involving "hit-and-run" accident cases. Here, in order to connect the two vehicles, the examination usually consisted of the spectrographic matching of the traces of paint which would invariably be transferred from one vehicle to the other at the moment of collision. A more conclusive results could be obtained when parts of the vehicle which had been broken off during the impact could be matched with those parts remaining on the vehicle as happened in one case where a small glass splinter found on the broken head lamp rim of a suspect motor car fitted perfectly a piece of glass found at the scene. Photographs were taken here with gratifying results.

An interesting conclusion was reached in a case involving a motor car and a motor scooter. The scooter while being ridden had somehow swerved off the road into a large drain and it was alleged that a certain motor car had collided into it from behind. However, on examination of the two vehicles, no evidence to indicate that any parts of these two vehicles had come into contact with each other was obtained. These results gave rise to speculations on the possibility that the scooterist had himself to blame when, whilst riding and making a sudden turn, he suddenly had his handle bar accidentally locked in full turn position because of the anti-theft locking device having been left in an "on" position. When received the handle bar of the motor scooter was in a "locked" position.

Miscellaneous

The numbers of exhibits and cases under miscellaneous were about the same as those for last year's.

Under miscellaneous were lumped together those exhibits, whose examinations were non-routine in nature and hence sometimes required special and more involved analysis, and which covered a wide variety of crime.

Acid throwing was still quite frequently met with. Sulphuric, nitric and hydrochloric acids were detected in a number of cases. In two cases, formic acid, and in one, cresol was detected.

Pepper powder thrown or intended for throwing on to faces of people were also examined. The purpose was to blind the victims in cases of robbery.

Cases of explosions by saboteurs were still met with especially during the early part of the year. A particularly notorious explosion was at a well known banking house killing three persons. Another one was on a ship. In these and in seven other cases exhibits were analysed in an attempt to discover the explosives used. However excepting for one case where residues of picric acid was detected, no explosive was detected in the others although products of detonation were detected.

There was a case where the screw plugs from a number of hand grenades of foreign manufacture and seized from certain suspects, were examined in order to decipher the markings, all of which had been filed off. These markings which could identify the origin of the grenades were sufficiently redeveloped in most of the plugs.

There was a case of 17 exhibits of different parts and components of home-made weapons including a "grenade" which was meant to explode on impact with the ground, a number of home-made cartridges firing lead slugs, powder from certain kinds of firecracker, firing tape caps, sand crackers and the like. All these were found to contain explosive mixtures with chlorate as the main constituent. Fortunately the manufacturer of these home-made weapons was apprehended by the Police before he could put them into use.

There were two cases involving possession of explosives. In one case the explosives were found to be T.N.T. and in the other a mixture of T.N.T. and ammonium nitrate.

Cases of fraud were also encountered. The exhibits came mostly from the Commercial Crime Branch of the Criminal Investigation Department and they included disinfectants, household bleach and detergents bearing certain well known brands (as they usually were). These exhibits were shown to be different chemically and physically from the genuine articles thus proving their fraudulent nature.

Shirts of a well known brand were similarly examined. Here differences in the embroidered label and in most cases in the material itself as well (and thereby also being different from the material claimed on the label) confirmed that they were imitations.

A shirt and a tube of lipstick were submitted in connection with a case where a man tried to outrage the modesty of a girl. Red stains believed to be from the girl's lipstick were found on the man's shirt. The exhibits were analysed and the red dyes on the stain and on the lipstick were found to be similar to each other.

In another case two men were arrested for defacing walls by writing slogans on them with ink. Exhibits submitted were scrapings of the marked wall and cotton swabs of the fingers of the two men. Analysis by paper chromatography of the inks showed that they were all similar although very little had been available from the swabs.

Two cases of sticking of posters were met with when the police submitted scrapings from the hands of the suspects and the paste samples. All were shown to contain starch or to be starch paste.

There was a case where a tractor at a building worksite had its engine suddenly seized up. On dismantling the engine black particles were found inside the crank case, oil filter, etc. These particles were submitted and when analysed were found to be carborendum, a very hard material used for

grinding purposes. It was suspected that some people who had earlier demanded protection money from the contractor and who had been refused had been responsible.

Documents

There was a total of 111 cases involving a total of 1,384 documents. As in the past years, the Singapore Police submitted the bulk of the exhibits — 87 cases involving 1,059 documents. The other sources to whom services were rendered included the Customs and Excise Department, Corrupt Practices Investigation Bureau, Postal Services Department, Immigration Department, Port of Singapore Authority, the Naval Police, Royal Air Force and the legal firms.

About 50 per cent of the cases examined involved handwriting in English and 20 per cent in Chinese. The rest comprised documents examined for tampering, fraudulent erasures and alterations, and forgery.

In one of the most successful operations in their fight against racketeers of forged identity cards, the Police brought to the court a number of accused, who were engaged in producing the forged cards. Amongst the exhibits seized and submitted for examination were four blocks of printing plates showing the design lay-out and lettering of an identity-card, a number of rubber stamps, for making the various impressions on an identity card such as Registration Office, dates, the name of an Issuing Officer, Replacement, etc., forged cards already complete with photographs and particulars, and several hundreds of blank printed cards ready for issue and sale to illegal immigrants and to people who would use them for fraudulent purposes. Following investigations, it was found that one fraudulent purpose of the forged card was its use in hire-purchase transactions. The holder of a forged card would produce it as proof of identity when making purchases of articles like radios, television sets, etc. on hire-purchase terms.

Upon examining the exhibits, the Document Examiner was able to demonstrate that the printing-plate blocks were used to print the series of forged cards, the rubber stamps were used to make the impressions found on the completed cards and one of the suspects detained was in fact the writer of the “particulars” on the already completed forged cards. All the accused pleaded guilty and were convicted.

The Document Examiner also assisted in the investigation of a number of cases involving another prevalent racket, namely, the sale of forged Medical Sick Leave Certificates of the General Hospital. In one case, the handwritten entries on the sick certificates were identified as having been written by a suspect detained. In another successful case, a wooden “chop” bearing the letters “M.O.P.D.” (Medical Out-Patients Department) was recovered from the house of a suspect as a result of a search by officers of the Corrupt Practices Investigation Bureau. It was found on comparison that this wooden “chop” was used to make the impressions on two forged certificates seized, a fact which provided a good evidence of the guilt of the suspect in question.

FORENSIC SECTION

DISTRIBUTION OF WORK 1965

Class of Work	SOURCE						
	Customs	Medical	Police	Other Depart- ments	Non- Official	Total Samples	Total Cases
Arson .. ..	..	..	19	..	..	19	13
Blood and Semen ..	..	2	682	..	73	757	175
Chandu and Opium ..	109	..	385	2	..	496	156
Documents ..	2	..	1,059	106	217	1,384	111
Drugs	28	6	217	..	..	251	62
Firearms Cases ..	..	1	105	..	5	111	26
Gold	3	..	..	..	..	3	2
Liquors:							
Adulterated ..	..	..	..	..	..	..	..
Illicit ..	233	..	..	..	..	233	15
Tobacco	4	..	..	..	..	4	1
Vehicles .. ..	..	..	22	6	..	28	22
Miscellaneous ..	55	..	233	..	10	298	74
Total ..	434	9	2,722	114	305	3,584	647

HEALTH SECTION

Food and Drugs Ordinance

The Environmental Health Section, Public Health Division of the Ministry of Health, submitted a total of 1,668 samples mainly in connection with the enforcement of the Food and Drugs Ordinance. The total number of samples, compared with the figure for 1964, showed an increase of 14.7 per cent. Of this number, 87.2 per cent consisted of foodstuffs, 11.2 per cent of medicine and drugs and 1.6 per cent of cosmetics, etc.

(a) Foodstuffs

The number of formal samples was 1,095, as compared with 496 samples for 1962 and 1,036 samples for 1963. The number of informal samples was 360, showing a decrease on the 1964 figure namely 432 samples.

Of the 1,095 formal food samples examined, approximately 17 per cent were found to be adulterated, below standard or otherwise irregular and appropriate certificates were issued, and of the 360 informal samples 7.5 per cent were found to be unsatisfactory (*vide* Table 151, on page 328 for details).

A wide variety of food, such as "*tow kuah*", "*char siew*", chilly powder, chilly sauce, preserved fruit, drinks and sweets were found to contain non-permitted coal-tar dyes. The number of "*tow kuah*" using Metanil Yellow, a non-permitted dye, remained high. Twenty four samples of preserved fruits ("*kanah*") and two samples of sweets, screened for colouring matter, were found to contain non-permitted dyes.

Thirty two samples of sauce, comprising 20 chilli sauce, five soya-bean sauce and seven tomato sauce, were found to contain excessive amounts of benzoic acid. Although benzoic acid is a permitted preservative for certain scheduled foods, the Food and Drugs Regulations 1957 permits only a maximum limit of 250 parts per million of benzoic acid for sauces. The maximum amount of benzoic acid found in the sauces was 4,030 p.p.m., ie. 16 times the maximum permitted limit.

Thirteen samples of tea-dust were found to contain added coal-tar dye. The addition of colour for facing of tea and tea-dust is prohibited by the Food and Drugs Regulations.

Of the intoxicating liquors analysed, one sample of brandy and six samples of stout were found to be adulterated.

Adulteration was also detected in chilli powder, coriander powder, coffee powder, coffee mixtures, groundnut oil, honey and milk. The main adulterants used were starch in chilli and coriander powders, coconut oil in groundnut oils, ground roasted maize in coffee powder, cane sugar in honey and in milk.

Only one sample of syrup was found to be deficient in Vitamin C content as compared with nine samples for last year. This improvement could be due to the fact that the trade in this type of syrups now stamps expiry dates on the labels, and after the expiry dates unsold bottles are replaced by new stock.

The interesting irregularities among informal samples were two blown canned food the contents of which were unfit for human consumption, one sample of flour contaminated with sulphur, one sample packet of potato crisps deficient in weight, one sample of instant drink tablets containing saccharin and one sample of vinegar containing 1.2 per cent of common salt.

(b) Medicine and Drugs

A total of 187 samples were submitted for examination of which 104 were formal. As in previous year, these consisted of British Pharmacopoeia or British Pharmaceutical Codex Preparations and patented medicines. These were examined either for conformity to British Pharmacopoeia or British Pharmaceutical Codex specifications or for checking ingredients declared on the labels.

During the early part of the year there were a few cases of methyl salicylate poisoning of children who have consumed medicated oil. With the cooperation of the Food and Drugs Section of the Ministry of Health, 40 informal samples of various brands of medicated oil sold in Singapore were submitted for analysis. With the exception of one brand, the others were found to contain methyl salicylate. Four brands were found to contain methyl salicylate in amount less than and eleven brands in amount more than the declared amount. Four brands did not disclose the presence of methyl salicylate.

The majority of these samples have particulars of doses for consumption either on the labels or in the accompanying brochures.

As a result of this survey, formal samples were taken. There samples were found to contain methyl salicylate in excess of the stated amount and one sample deficient in methyl salicylate. One sample did not declare the presence of methyl salicylate.

A new rapid method of assaying methyl salicylate in medicated oils was devised.

Towards the end of the year, in an arsenic poisoning case, investigations revealed that the patient had been taking asthma pills. These pills on analysis were found to contain 62,700 parts per million arsenic. A survey was conducted by the Food and Drugs Section and out of 15 samples analysed, eight were found to contain arsenic ranging from 19.4 parts per million to 69,500 parts per million. Certain Chinese herbs were also checked but were found to be satisfactory.

One sample of poppy seeds known locally as "Kas Kas" and used in making curry was found to contain 0.007 per cent anhydrous morphine.

(c) Other Samples

Of the 26 official samples submitted, 19 were formal and consisted of colouring matter, mascarra, hair dyes, cotton-wool and baby powder for compliance with the Food and Drugs Regulations and B.P.C. standards in the case of cotton-wool. One sample of hair dye was found to contain one per cent of lead, an offence under the Food and Drugs Ordinance.

Of the seven samples of mascarra analysed, six were found to contain lead varying from 75.3 per cent to 86.9 per cent.

One sample of cotton-wool failed B.P.C. standards in certain tests.

Other Medicines and Drugs

The 916 samples submitted by the Chief Pharmacist were routine samples to check for compliance with formulations.

For the Customs and Excise Department, 59 samples of raw opium were assayed for their moisture and morphine contents with a view to their ultimate sale.

Metallic Contamination

From the routine samples of liquor submitted by the Customs and Excise Department for spirit strength and other determinations, 52 samples were checked for lead and copper contents. Four samples submitted by commercial firms were also similarly checked. The samples which were checked included new brands of liquor and these brands previously found to contain high lead or copper. All the samples were found to have copper and lead contents within the limits laid down in the Food and Drugs Regulations and in the Customs (Prohibition of Imports) Notification 1963.

HEALTH SECTION
DISTRIBUTION OF WORK 1965

Class of Work	SOURCE					
	Customs	Medical	Other Depart- ments	Non- Official	Total Samples	Total Cases
Food and Drugs Ordinance						
(a) Foodstuffs:						
Formal 		1,095	..	..	1,095	1,095
Informal		360	..	48	408	..
(b) Medicine and Drugs:						
Formal 		104	..	..	104	104
Informal		83	..	..	83	..
(c) Other Samples 		26	..	3	29	7
Foods: Other .. .. ..		..	1	22	23	..
Medicine and Drugs: Other ..	59	917	..	12	988	..
Metallic Contamination ..	52	..	..	4	56	..
Total ..	111	2,585	1	89	2,786	1,206

TABLE 151

FORMAL AND INFORMAL FOOD SAMPLES ADULTERATED
OR OTHERWISE IRREGULAR

No.	Sample			Nature of Irregularity
1	Brandy	..	..	Adulterated.
17	Cakes /Buns	..	..	Contained non-permitted dye.
9	“Char Siew” (Roasted Sweet Meat)	..	..	Contained non-permitted dye.
5	Chilly Powder	..	..	Contained non-permitted dye.
4	Chilly Powder	..	..	Contained non-permitted dye and adulterated with starch.
19	Chilly Sauce	..	..	Contained excessive benzoic acid
1	Chilly Sauce	..	..	Contained excessive benzoic acid, non-permitted dye and saccharin.
3	Coffee Mixture	..	..	Deficient in coffee.
2	Coffee Powder	..	..	Adulterated.
10	Coriander Powder	..	..	Adulterated with starch.
8	Groundnut Oil	..	..	Non-genuine groundnut oil
3	Honey	..	..	Contained added sucrose (cane sugar)
9	Iced Drinks	..	..	Contained saccharin or non-permitted dye or both.
1	Lemon Syrup	..	..	Contained excessive benzoic acid.
7	Milk	..	..	Deficient in fat or solids-not-fat.
11	Preserved Fruit	..	..	Contained non-permitted dye.
5	Soft Drink	..	..	Contained non-permitted dye.
11	Soft Drink	..	..	Contained saccharin.
1	Soft Drink	..	..	Contained excessive benzoic acid.
29	Soya bean cake (“Tow Kuah”)	..	..	Contained non-permitted dye.
5	Soya bean sauce	..	..	Contained excessive benzoic acid.
6	Stout	..	..	Adulterated.
2	Sweets	..	..	Contained non-permitted dye.
1	Syrup	..	..	Deficient in Vitamin C content.
8	Tea Dust	..	..	Contained added dye.
7	Tomato Sauce	..	..	Contained excessive benzoic acid.
2	Canned Food	..	..	Unfit for human consumption.
1	Coffee Powder	..	..	Adulterated.
1	Flour	..	..	Contaminated with Sulphur.
1	Instant Drink Tablets	..	..	Contained saccharin.
1	Potato Crisps	..	..	Deficient in weight.
13	Preserved Fruit	..	..	Contained non-permitted dye.
1	Soya bean Cake (“Tow Kuah”)	..	..	Contained non-permitted dye.
1	Syrup	..	..	Deficient in Vitamin C content.
5	Tea Dust	..	..	Contained added colour.
1	Vinegar	..	..	Contained 1.2 per cent common salt.

212

		Formal	Informal
Total No. of samples received	..	1,095	360
No. of unsatisfactory samples	..	185	27
Percentage of unsatisfactory samples	..	16.9	7.5

TABLE 152

FORMAL AND INFORMAL DRUG SAMPLES ADULTERATED
OR OTHERWISE IRREGULAR

<i>No.</i>	<i>Sample</i>	<i>Nature of Irregularity</i>	
1	Tincture of Iodine B.P. ..	..	Deficient in iodine
5	Medicated oil ..	..	Deficient in methyl salicylate.
14	Medicated oil ..	..	Excessive methyl salicylate.
7	Medicated oil ..	..	Methyl salicylate content not declared on label.
1	Medicated oil ..	..	No formula on label
3	Antacid tablets ..	..	Excessive aluminium hydroxide.
2	Proprietary drugs ..	..	Infringement of patent rights.
1	Proprietary drug ..	..	Not in B.P. although claimed to be B.P.
1	Proprietary drug ..	..	Incorrectly labelled.
1	Vitamin B1 tablet ..	..	Deficient in Vitamin B1.
1	Fever powder ..	..	Deficient in caffeine and phenacetin
2	Cod-liver oil capsules ..	..	Deficient in Vitamin A.
6	Asthma pills ..	..	Excessive arsenic.
2	Asthma pills ..	..	Excessive arsenic and lead.

 47

		<i>Formal</i>	<i>Informal</i>
Total number of samples received ..	..	104	83
Number of unsatisfactory samples ..	..	21	26
Number of unsatisfactory samples for which certificates were issued ..	..	16	—
Percentage of unsatisfactory samples ..	..	19.2	31.4

WATER AND SEWAGE SECTION

Water

The total number of water samples received and analysed during the year amounted to 24,138. Of these 19,607 samples (approximately 81 per cent) were submitted by the Water Department of the Public Utilities Board. Samples of swimming pool water and aquarium water submitted by the Parks and Recreation Division amounted to approximately 16 per cent of the total number.

Drinking Water

The samples from the Water Department, Public Utilities Board, were for routine examination and for special investigation purposes.

The daily routine tests were essential for the determination of the efficiency of purification process at the various treatment works and for

ensuring that there was no deterioration of the treated water in the distribution system. The table below shows the various samples received from the Water Department:

Routine daily water samples				
From treatment works and distribution system ..	..	12,816		
From camp supplies .. .. .	..	1,479		
For fluorine test .. .. .	..	4,928		
Monthly samples from Clear Water Tank ..	..	63		
Monthly samples of raw water .. .. .	..	78		
Water for special investigations .. .. .	..	238		
Total ..			19,607	

Tables 153 and 154 on pages 332 and 333 respectively show the average analytical figures for the monthly raw water and treated water from the various sources. Since July no water sample from Bedok Wells was received.

The Singapore water continued to receive fluoridation throughout the year to the extent of about 0.7 parts per million of fluorine. This year is the ninth year of the fluoridation of the Singapore water supply and the effect of this addition is being surveyed by the Assistant Director of Medical Services (Dental), formerly known as Chief Dental Officer.

The Water Boats Engineer, Port of Singapore Authority, continued to submit, once a month, water samples from its storage reservoir for chemical and bacteriological tests. These water samples were found to be satisfactory.

Most of the water samples from wells submitted by the Public Health Inspectors were found to be unfit for consumption unless treated.

Other Water

Two samples of water submitted by the Licensing Officer, Public Water Department, were for the contents of sodium chloride.

Seven samples of water from a commercial source were for conductivity test only

Swimming Pool Water

The number of samples of pool water analysed was 4,208 comprising 3,790 from the Parks and Recreation Division of the Ministry of Labour and 418 from commercial sources. The samples from the Parks and Recreation Division were submitted daily and came from the following public pools:

Mount Emily Pool	290
Yan Kit Pool	1,164
River Valley Pool	1,164
Farrer Park Pool	1,172

Since July no sample from Mount Emily Pool was received as the pool was under repair.

Commercial samples from four social clubs, one seamen's club and four Royal Air Force Stations amounted to 418.

Aquarium Water

Samples of fresh and salt water from the Van Kleeef Aquarium were sent in regularly for routine analysis.

River Water

The river water samples amounting to 130, submitted by the Public Works Department, were taken from Singapore River, Geylang River, Kallang River, Serangoon River, Sungai Whampoa, Jurong River, Katong Canal, Siglap Canal, Stamford Canal and Rochore Canal. Except for Jurong River and Serangoon River the conditions of the others were far from satisfactory.

The Public Health Engineer, Public Health Division, submitted 29 samples of water from Jurong in connection with mosquito control. They were analysed for pH, chloride content and oxygen absorbed from permanganate in 4 hours.

Sewage

The following sewage samples were analysed for the Public Works Department:

Sewage, sludges, top-water and effluent from sewage disposal works	1,222
Samples from Septic Tanks ..	1,580
	<hr/>
	2,802
	<hr/>

The Royal Air Force submitted for samples for analysis.

The average analytical results for the final effluents from Kim Chuan Road Works are shown in the Table below:

KIM CHUAN ROAD WORKS

AVERAGE ANALYTICAL RESULTS OF FINAL EFFLUENTS (in parts per million)

		<i>Phase I</i>	<i>Phase II</i>	<i>Phase III</i>
Free and Saline Ammonia ..		36.4	28.5	34.2
Albuminoid Ammonia ..		4.9*	2.2*	2.7*
Oxygen Absorbed in 4 hours ..		30.5	23.3	31.9
Biochemical Oxygen Demand ..		95.3	68.4	71.9
Total Solids		555	525	646
Suspended Solids		52.4	53.2	67.4
Chlorides		144	160	198
Nitrates		absent	8.5*	absent
pH		7.0	7.0	7.1

* absent on most occasions.

WATER AND SEWAGE SECTION

DISTRIBUTION OF WORK 1965

Class of Work	SOURCE						Total Samples
	Medical	Water Department	Public Works Department	Parks and Recreation	Other Departments	Non-Official	
Water:							
Drinking ..	47	19,607	..	..	..	29	19,683
Other ..	..	..	..	..	2	7	9
Swimming Pool ..	..	..	..	3,790	..	418	4,208
Aquarium ..	..	..	..	79	..	..	79
River ..	29	..	130	..	..	..	159
Sewage ..	1	..	2,802	..	..	4	2,807
Total ..	77	19,607	2,932	3,869	2	458	26,945

TABLE 153

RAW WATER

AVERAGE RESULTS OF MONTHLY SAMPLES, 1965
(Results in parts per million)

	Tebrau River	Pontian Reservoir	G. Pulai Reservoir	Pierce Reservoir	Mac-Ritchie Reservoir	Bedok Wells	Scudai River
Colour (Hazen Units)	144	29	15	48	42	132	144
Turbidity (Silica Units)	33	6	4.1	12.1	11.3	28.5	33
pH Value ..	7.1	6.8	6.5	6.2	6.1	7.1	6.5
Ammoniacal Nitrogen (as N) ..	0.05	0.01	0.01	0.01	0.01	2.59	0.03
Albuminoid Nitrogen (as N) ..	0.10	0.14	0.08	0.20	0.15	0.20	0.12
Nitrite Nitrogen (as N)	trace	absent	absent	absent	absent	0.01	trace
Nitrate Nitrogen (as N)	0.08	0.01	0.03	0.01	0.01	0.04	0.20
Carbon Dioxide ..	1.1	1.3	2.7	1.0	1.0	54.3	3
Iron (as Fe) ..	0.3	0.2	0.1	0.2	0.2	4.6	0.5
Chlorides (as Cl) ..	2	2	2	4	2	160	2
O ₂ Absorbed from Permanganate in 4 hours ..	1.6	1.0	1.0	1.3	1.0	2.5	1.7
B.O.D. in 3 days ..	0.4	0.6	0.2	0.9	0.8	1.9	0.4
Total Alkalinity (as CaCO ₃) ..	3	4	4	1	2	170	5
Total Hardness (as CaCO ₃) ..	7	7	6	6	5	216	9
Carbonate Hardness (as CaCO ₃) ..	3	5	4	1	2	170	5
Total Solids ..	65	38	33.5	37	40	589	82
Suspended Solids ..	36	6	4	10	10	14	43
Inorganic Ash ..	41	14	15	12	11	350	49
Organic Solids ..	24	24	18	26	30	289	33
Silica (as SiO ₂) ..	9	13	12	9	8	17	12
Phosphates (as PO ₄) ..	0.02	0.01	0.02	0.01	0.01	0.1	0.06

TABLE 154

TREATED WATER

FROM CLEAR WATER TANK

Average results of Monthly Samples, 1965
(Results in parts per million)

	Terbau River	Gunong Pulai	Wood- leigh	Bukit Timah	Bedok	Scudai
Colour (Hazen Units) ..	5	5	5	5	5	5
Turbidity (Silica Units) ..	1.4	1.3	1.4	1.5	2.1	1.4
pH Value ..	7.4	7.4	7.4	7.3	7.8	7.4
Ammoniacal Nitrogen (as N) ..	0.31	0.23	0.25	0.20	1.55	0.01
Albuminoid Nitrogen (as N) ..	0.02	0.05	0.03	0.03	0.14	0.02
Nitrite Nitrogen (as N) ..	absent	absent	absent	trace	trace	absent
Nitrate Nitrogen (as N) ..	0.04	0.01	0.01	trace	0.3	0.15
Residual Chlorine ..	1.1	1.1	0.8	0.7	1.2	0.6
Carbon Dioxide ..	0.4	0.4	0.4	0.4	3.4	0.5
Iron (as Fe) ..	0.1	0.1	0.1	0.1	0.1	0.1
Chlorides (as Cl) ..	3	3.5	3.5	4	88	4
Residual Alum (as Al) ..	0.2	0.4	0.3	0.5	0.1	absent
O ₂ Absorbed from Permanganate in 4 hours ..	0.3	0.5	0.5	0.4	0.8	0.1
B.O.D. in 3 days ..	0.2	0.2	0.2	0.2	0.3	0.3
Total Alkalinity (as CaCO ₃) ..	11	8	7	7	112	11
Total Hardness (as CaCO ₃) ..	23	23	29	35	186	29
Carbonate Hardness (as CaCO ₃) ..	11	8	7	7	112	11
Total Solids ..	44	47	49	63	436	54
Suspended Solids ..	2	2	1	2.7	1.7	1

MISCELLANEOUS SECTION

General

One hydrometer from the Customs and Excise Department was calibrated, and a correction table was supplied for the hydrometer.

Nine samples of soap stock from various soap manufacturers were submitted by the Poisons Inspector, Ministry of Health, for determination of the amount of caustic soda used in the soap-making, in order to check whether the caustic soda applied for under licence was misused for other purposes.

The Public Works Department submitted 36 sheets of blotting paper for impregnation with lead acetate to be used for testing of hydrogen sulphide gas, and one sample of powdery "concrete" for determination of its composition.

The Water Department, Public Utilities Board, submitted a sample of water-meter encrustation for analysis. It was found to contain large amounts of zinc, which could be due to de-zincification of non-ferrous fittings

containing zinc. A yellow powder scraped from a chlorinator at Scudai Water Works was also submitted and was found to be chlorinated matter, for example, of grease or of oil associated with piping and joints of new plant.

The number of samples submitted by the Primary Production Department showed an increase, 263 samples as compared with 75 samples for 1964. These samples comprised 210 samples of animal feedstuffs, 43 samples of soil, 5 samples of kapok seed cake, two samples each of rubber seed and malt and one sample of oil palm kernel. The feedstuffs were analysed mainly for their proteins, calcium and phosphorus contents. In addition, two samples were analysed also for manganese and two samples for Vitamin E. The soil samples were analysed mainly for total soluble salts, chlorine, organic matter and pH. Of interest was the analysis of two samples of rubber seed for prussic acid. It was found that after drying at 100°C the prussic acid contents of the seeds were reduced by 85 per cent.

Metals, Minerals and Chemicals

The Water Department, Public Utilities Board, submitted for analysis 98 samples of water treatment chemicals comprising hydrated lime, aluminium sulphate, sodium bicarbonate, sodium silicofluoride, sodium aluminate and sodium silicate and one sample of pig lead for compliance with their specifications. It also submitted two samples of filter sand for sieve grading, and one sample of chlordane insecticide which was intended to be used on the golf links in the catchment area. A suitable method of determining micro amounts of this insecticide in water was developed. Request was received for the preparation of 16 samples of orthotolidine and phenol red reagents.

The Public Works Department submitted two samples of concrete chips for their alumina contents to check whether high alumina cement was used in the concrete, one sample of iron mesh and one sample of iron angle for galvanized coating and one sample of encrustation from a sewerage pipe for its composition. The Inspector of Factories submitted a sample of powder obtained from a factory for its lead content.

Solutions prepared for various Government departments, consisted of book preservative for the Permanent Secretary (Treasury) and the Bukit Panjang/Jurong District Office, textile-fireproofing solution for the Broadcasting Division, special reagents for testing of dyes on carcasses of slaughtered animals, and hypo-solution for the Microfilm Unit.

Several commercial firms submitted 62 samples of sodium arsenite for compliance with statutory colour requirements of the Federation Poisons (Sodium Arsenite) Ordinance, 1949, all of which except two samples were found to comply. Four cylinders of carbon dioxide were received from a commercial firm for purity test.

Thirty-one samples of soap submitted by the Central Supplies Office were analysed for compliance with their specifications. One sample of aluminium sulphate and two samples of lavatory cleanser were also submitted for testing.

Microfilm

For the Microfilm Unit 700 samples of microfilm were tested for residual hypo.

Oils

Twelve samples of anti-malarial oil were tested for the Public Health Division for conformity with specifications. One sample of unknown oil was submitted for identification by the Customs and Excise Department, and was found to be Java Cananga Oil. A commercial firm submitted a sample of patchouli oil for solubility test in 90 per cent alcohol.

The Singapore Fire Brigade submitted 92 samples of liquid (as compared with 40 samples in 1964) for classification as to whether or not they were "Petroleum", as defined in the Petroleum Ordinance or "Cellulose Solution" under the Cellulose Solution By-Laws. Two samples were found to be "Cellulose Solution", and 16 samples were found to be not classifiable as either "Petroleum" or "Cellulose Solution".

MISCELLANEOUS SECTION
DISTRIBUTION OF WORK 1965

Class of Work	SOURCE								Total Samples
	Customs	Medical	Police	Water Department	Public Works Department	Parks and Recreation	Other Departments	Non-Official	
General	1	9	..	2	2	..	272	18	304
Metals, Minerals and Chemicals ..	..	1	..	118	5	..	42	78	244
Microfilm .. ..	..	..	..	..	..	..	700	..	700
Oil	1	12	..	..	..	..	92	1	106
Total ..	2	22	..	120	7	..	1,106	97	1,354

REVENUE SECTION

The account given here covers all the work done for the Customs and Excise Department except work in connection with offences under the Customs Ordinance or preventive aspects, which are dealt with under the Forensic Section.

During the year 8,474 samples were sent in by the Customs and Excise Department for analysis as compared with 7,207 samples for 1964,

showing an increase of 1,267 samples. This increase was largely due to the increase in the variety of items examined under the section Duty Category Investigations.

As in previous years, the bulk of the Customs samples comprised liquors, the rate of duty on which depends on three factors, namely alcoholic strength, volume and classification. During the year 6,236 liquor samples (excluding toddy samples) were submitted for classification, spirit strengths and volumes. Comparison with last year's figure of 5,308 showed an increase of 928 samples. Labels of liquor samples were also checked for compliance with the Food and Drugs Regulations. Whenever there was contravention, importer was advised.

European-Type Liquors

The total number of the above type of liquors submitted by the Customs and Excise Department was 2,745. Commercial firms submitted two samples. Besides, having to comply with limits for lead and copper prescribed by the Food and Drugs Regulations, whisky, rum, gin and brandy have to conform to standards for spirit strength and in the case of brandy ester content also.

Five samples of brandy, three samples of rum and three samples of gin were classified as "Intoxicating liquor not elsewhere specified" because of failure to conform to either spirit strength or ester content or both. Thirty-two samples of liquor were assayed for lead and copper. The amount of lead or copper found was within the limits allowed in the Food and Drugs Regulations.

Samsoo

The number of samsoo samples analysed increase from 2,761 for 1964 to 3,491 for 1965. Approximately 24.5 per cent were from local distilleries.

Accuracy in analysis was most essential as duty on gallons of liquor was frequently based on the results of a single sample. As a check monthly referee samples were submitted for analysis. Twenty-four samples of imported samsoo were tested for lead and copper and were all found to be satisfactory.

Denaturation

The number of samples of alcohol denatured during the year on behalf of commercial firms nearly doubled that of last year (459 as compared with 245 for 1964). This could be due to the prohibition of import of methylated spirit.

Whereas only five drums of alcohol in 1964 were denatured with one per cent kerosene and $\frac{1}{6}$ per cent pyridine for acceptance as methylated spirit, 126 drums together with 11 tanks (quantity of alcohol ranging from 725 gallons to 4,300 gallons) were denatured as such in 1965.

Twenty-three samples were denatured in accordance with the Federation of Malaya requirements i.e. 2 per cent essential oil, 1 per cent dimethylphthalate, and 5 per cent methyl alcohol.

The rest were denatured with either essential oil, dimethylphthalate, tobacco dust or methyl alcohol.

Methylated Spirit and Other Denatured Alcohol

The total number of samples handled showed a decrease, 459 as compared with 729 for last year. These samples were all already denatured before being imported to Singapore. Samples were taken from every consignment on arrival to ensure that they were adequately methylated or denatured in accordance with the Customs Regulations.

All the samples analysed were found to be adequately denatured. Two samples were denatured with methyl alcohol, the rest were denatured with 1 per cent kerosene and $\frac{1}{6}$ per cent pyridine.

Toddy

The number of toddy samples received this year again showed a decrease (417 in 1963, 305 in 1964 and 184 in 1965). These routine samples were submitted for the purpose of checking on the quality of toddy sold in the toddy shops of Singapore. Eighty-six per cent were classified as good and 5.5 per cent as bad. The bad samples were due to added water or over fermentation or both.

Duty Category Investigation

The number of samples sent in under the above heading showed a marked increase over the past three years (168 in 1963, 865 in 1964 and 1,600 in 1965).

The increase was brought about by the coming into effect the Customs Duties Order, 1965, which included many new items which were previously non-dutiable.

Of the 112 samples of detergents and cleansing preparations, sent in for analysis, only seven samples were found to contain soap. Last year 55 samples were found to contain soap out of 214 samples examined.

A total of 315 samples of paints and paint materials were analysed compared with 215 for 1964. Of these, 75 samples of resin solutions were tested for viscosity, the result of which would decide whether the samples were dutiable or not. Thinners and solvents amounted to 129 samples and were examined as to whether they were petroleum. For those samples found to be petroleum as defined under the Customs Ordinance, 1960, flash points were determined to differentiate the rate of duty. The remaining 111 samples included, varnishes, lacquers, pigments, driers, paste, etc.

Other samples analysed included fruit juices, cocoa, flavouring essences, sugars, waxes, caramel and saccharin. At the close of the year samples which do not come under any of the items in the Customs Duties Order

1965, were also sent in for analysis for classifying them in the appropriate code in the Malaysia Trade Classification and Customs Tariff, 1964.

Flavouring essence constitute a major item, a total of 259 samples being sent for analysis of which two were classified as compound alcoholic preparation for the preparation of beverage.

Food preparations containing sugar e.g. jam, condensed milk, syrup, soft drinks, sweets, biccuits, canned pineapple, etc., were also sent in for analysis for sugar content. The analysis was done to assist the Customs Department to calculate drawback of duty on sugar used in the preparation.

Also included under this heading were 15 alcoholic beverages which were found to contain less than 2 per cent proof spirit and therefore classified as "Not Intoxicating Liquor". There were 24 samples which were found to contain more than 2 per cent proof spirit but recommendations for exemption from duty were made as they were used for medical purposes.

REVENUE SECTION

DISTRIBUTION OF WORK 1965

Class of Work				SOURCE		
				Customs	Non-Official	Total Samples
Denaturation of Spirit	..	..	..	..	459	459
Liquors:						
Beer, Cider and Stout	..	..	..	1,037	..	1,037
Brandy	..	..	..	288	..	288
Whisky, Rum and Gin	..	..	..	274	2	276
Wine, Bitters and Liguers		..	..	751	..	751
Miscellaneous	..	..	..	395	..	395
Samsoo	..	..	..	3,491	..	3,491
Toddy	..	..	..	184	..	184
Methylated Spirit, etc.	..	..	..	454	..	454
Duty Category Investigations	..	..	..	1,600	..	1,600
Total ..				8,474	461	8,935

TOXICOLOGY SECTION

The table below indicates the number of cases and samples for this year and last year.

NUMBER OF CASES AND SAMPLES

Type of Cases	No. of Cases		No. of Samples	
	1964	1965	1964	1965
Poisoning	596	680	981	1,006
Clinical (for lead, arsenic, fluorine, etc.)	—	—	488	491
Alcohol (in urine, blood, etc.) ..	241	243	395	364

Poisoning Cases

The above table showed that there was an increase in both the number of samples and cases for this year. Out of the total of 680 poisoning cases examined, 92 of them were autopsy cases.

Table 155 on page 342 shows the diversity of substances found in the exhibits submitted for analysis, and the number of cases of each.

In spite of the control of sale of sodium hydroxide, the number of sodium hydroxide poisoning cases encountered was 28, which was the same as that of last year. There were altogether eight fatal cases. Poisoning by sodium hydroxide is probably one of the most unpleasant methods of dying, since it involves great pains and is rarely rapid.

There were a number of cases of attempted suicide or accidental poisoning using synthetic detergents and soap solutions. They were taken probably because it was thought that detergents and soap, being cleansing agents would produce the same effect as sodium hydroxide. There were no fatal cases due to detergent or soap poisoning.

Poisoning by insecticides, such as D.D.T. gammexane, diazinon, malathion and parathion have been encountered. Owing to the more frequent use of malathion, an organo phosphorus insecticide, there were 15 cases of poisoning due to this insecticide as compared with six cases last year. There was only one death. In this case, the stomach and contents was found to contain 3.4 grams of malathion, but no malathion was detected in either the specimen of liver or the blood.

In a non-fatal case, the wife had a quarrel with her husband and was assaulted by him. She drank some insecticide, started vomitting and developed severe abdominal pain. On analysis, 1.38 grams of malathion were detected in the stomach washout.

Poisoning by D.D.T. and gammexane also increased from eight cases last year to 13 cases this year.

One unusual case of poisoning by parathion was submitted by the Veterinary Diagnostic Laboratory, Primary Production Department. The pigs were found to be ill after being fed with some food, and several died. The food was submitted for analysis, and traces of parathion was detected in the food. The feeding with this batch of contaminated food was immediately discontinued, and no further illness of the pigs was reported.

A household commodity which frequently met in poisoning cases was liniment containing methyl salicylate and/or turpentine. Twenty-five cases of poisoning were encountered resulting in three deaths. In one fatal case of accidental poisoning, the deceased had a headache and wanted to take a headache mixture, but took a liniment containing methyl salicylate by mistake. Methyl salicylate was found to be present both in the stomach and the liver.

Cases of poisoning involving household commodities such as dettol, kerosene, slaked lime, bleaching solutions (sodium hypochlorite), sodium bicarbonate and carbonate, lavatory cleansing powder containing sodium

bisulphate were encountered. In an unusual case 12.6 grams of sodium chloride (common salt) were detected in the stomach washout.

There was a large number of poisoning cases by barbiturates. In many cases, the patients/deceased took not only more than one type of barbiturates but also antihistamines such as largactil. Altogether, there were 60 cases of poisoning due to this class of hypnotic resulting in five deaths.

In one suicide case, a suicide note was found beside the body of a dead woman. The stomach was found to contain 420 milligrams of a mixture of two barbiturates, namely amytal and phenobarbitone.

Among the non-barbiturate sedative class, there were 12 cases of dichloralphenazone but only one was fatal, one case of gluthethimide (doriden), one case of methaqualone (melsedin) and one case of meprobamate.

Three fatal cases of poisoning by carbon monoxide were encountered. The specimens of blood in these three cases were found to contain 60 per cent, 40.5 per cent and 8.9 per cent of carboxyhæmoglobin respectively.

Alkaloids encountered in cases of poisoning were amphetamine, hyoscine, ephedrine, morphine, opium, pilocarpine, strychnine and brucine.

In one non-fatal case, a person took some Chinese herbs and developed severe headache, cramps and giddiness. The stomach washout was found to contain strychnine and brucine. These two alkaloids were normally found together in *nux vomica*.

In another case, a person was found dead in his house. The Pathologist sent in the organs to exclude death by poisoning. On analysis, the stomach and the liver were found to contain 60 milligrams and 180 milligrams of hyoscine (scopolamine) respectively. Hyoscine is the main alkaloid found in the *Datura* fruits.

In one case, a six year old child developed jaundice and hæmolytic anæmia after taking some Chinese medicine in the form of black pills. On analysis, the black pills were found to contain 14,000 parts per million of lead.

There was an emergency case in which a woman in coma was brought to the hospital by the Police. The nature of poison suspected was barbiturate. However the vomitus was found to contain 56 milligrams of chloroform. Traces of chloroform was also detected in the specimens of blood and urine.

In November, five cases of methyl alcohol poisoning were encountered resulting in three deaths. All of them were believed to have drunk samsoo mixed with methyl alcohol.

This year, there were only three cases from Sabah as compared with 19 cases last year.

In one case, the stomach contents from an Alsatian dog, suspected to have been poisoned, was found to contain caustic soda.

In another case, the organs of a cow, suspected to have died from arsenic poisoning, were found to contain arsenic.

In the third case, the stomach contents of a dead person was found to contain arsenic and formalin.

Blood, Urine, etc. for Alcohol

There were 243 cases involving a total of 364 specimens analysed this year. About one quarter of the cases involve living persons brought in by the Police for simple drunkenness or drunken driving.

Out of the total of 243 cases, 105 of them were autopsy cases. These were mainly fatal traffic accident cases in which either the drivers, passengers or pedestrians were killed. In such cases, the blood of the deceased was submitted for detection of ethyl alcohol. Other cases in which blood specimens were analysed for ethyl alcohol included murder cases, hanging cases, stabbing cases and persons falling from a height.

There was a case submitted by the British Force involving the death of a sailor on board a ship. Before his death, there was heavy drinking of rum for the previous two days. The concentrations of ethyl alcohol found in both the blood and urine were very high — 402 milligrams of ethyl alcohol per 100 millilitres of blood and 552 milligrams of ethyl alcohol per 100 millilitres of urine.

Clinical Specimens

The 491 specimens under this heading were analysed for the following substances:

<i>Analysed for</i>		<i>Specimens</i>
Fluorine	.. ..	376
Lead	.. ..	92
Lead and Arsenic	.. ..	2
Lead and Copper	.. ..	1
Arsenic	.. ..	18
Ethyl Alcohol	.. ..	1
Mercury	.. ..	1
		<hr/> 491 <hr/>

Periodic check was carried out on urine specimens from workers who were engaged in the treatment works of the Water Department, Public Utilities Board. Out of 376 specimens of urine analysed, 27 specimens were found to contain over 2 parts per million of fluorine.

In connection with a building site contaminated with tetraethyl lead, urine specimens from twenty workers were analysed for lead. The specimens were found to contain lead varying from 0.17 milligram per litre to 1.9 milligram per litre.

Specimens for suspected arsenic poisoning included urine, hair and nail clippings. In one case arsenic was not detected in the hair and nail clippings but was detected in the urine specimen.

Copper was detected in a urine specimen from a patient suspected of suffering from Wilson's disease.

In a suspected mercury poisoning case, no mercury was detected in the specimen of urine.

TABLE 155

SUBSTANCES FOUND AND THE NUMBER OF CASES

A.P.C.	8	Iodide	2
A.P.C., Phenolphthalein	1	Iodine	1
Acetic acid	1	Isoprenaline	1
Acriflavine	2	Isoprenaline, Ephedrine	1
Amido-pyrine	2	Kerosene	9
Ammonia, Salicylate	1	Kerosene, Alcohol	1
Ammonia, Thiocompound	1	Kerosene, Detergent	2
Amphetamine	1	Largactil	22
Amytal	13	Largactil, Librium Tricloryl and Tryptanol	1
Amytal, Amphetamine	1	Lead	1
Amytal, Alcohol	2	Librium	1
Amytal, Largactil	3	Magnesium	3
Amytal, Phenobarbitone	2	Magnesium Sulphate, Aluminium	1
Amytal, Soneryl	1	Malathion	8
Amytal, Soneryl, Largactil	3	Malathion, Kerosene	7
Amytal, Soneryl, Phenacetin and Codeine	1	Menthol, Camphor	1
Arsenic	3	Mercurochrome	1
Arsenic, Formalin	1	Meprobamte	1
Aspirin	7	Methaqualone	1
Aspirin, Barbiturate, Alcohol	1	Methyl Alcohol	5
Aspirin, Phenacetin, Codeine	2	Methyl Salicylate	19
Barbiturate	32	Methyl Salicylate, Camphor and Menthol	1
Barbiturate, Largactil	2	Mineral Oil	2
Bismuth, Petroleum Jelly	1	Morphine	1
Caffeine	1	Morphine, Codeine	2
Calcium, Phosphate	1	Nembutal	1
Camphor	1	Opium	13
Carbon Monoxide	3	Opium, Phenacetin, Salicylate	1
Chlorate	1	Oxytetracycline	1
Chlorinated Insecticide	1	Paracetamol	1
Chloroform	2	Parathion	1
Chlortetracycline	1	Phenacetin	4
Codeine	2	Phenacetin, Caffeine	1
Cresols	2	Phenacetin, Camphor	1
D.D.T., Alcohol	1	Phenazone	3
D.D.T., Gammexane, Kerosene	2	Phenergan	3
D.D.T., Kerosene	8	Phenobarbitone	5
Dettol	14	Phenobarbitone, Amindopyrine, Eipyrone and Papaverine	1
Detergents	19	Phenobarbitone, Codeine, Histadyl and Paracetamol	1
Diazinon	2	Phenobarbitone, Phenergan	1
Dilantin	1	Phenobarbitone, Soneryl	2
Doriden	1	Phenol	1
Dormwell (Dichloralphenazone)	12	Phenolic Compound	1
Ethyl alcohol	9	Phenothiazine Compound	5
Ethyl alcohol, Iodine	1	Phosphate, Chloride	1
Fatty Acid	1	Pilocarpine	1
Gammexane	2	Promazine	1
Gentian Violet	1	Resorcinol	1
Hydrochloric Acid	2		
Hyoscine	1		
Indian Hemp	1		

TABLE 155---continued

Salicylate	5	Sodium Hydroxide	27
Salicylic acid	2	Sodium Hydroxide, Sodium Carbonate	1
Seconal	3	Sodium Hypochlorite	11
Slaked Lime	1	Soneryl	5
Soap	4	Soneryl, Codeine, Phenacetin ..	1
Soap, Sodium Bicarbonate ..	1	Strychnine, Brucine	1
Sodium Bicarbonate	7	Sulphatriad, Benadryl, Penicillin ..	1
Sodium Bisulphate	1	Sulphadiazine, Salicylate	1
Sodium Carbonate	3	Turpentine	3
Sodium Chloride	3	Turpentine, Methyl Salicylate ..	2
Sodium Chloride, Polaramine and Amaranth	1	No Poison Found	265

TOXICOLOGY SECTION

DISTRIBUTION OF WORK 1965

Class of Work	SOURCE						Total Cases
	Medical	Police	Water Department	Other Departments	Non-Official	Total Samples	
Clinical Specimens ..	115	..	376	..	..	491	..
Blood, Urine etc. for Alcohol ..	361	..	..	..	3	364	243
Poison Cases:							
Exhibits ..	87	84	..	10	4	185	} 680
Specimens ..	807	..	..	9	5	821	
Total ..	1,370	84	376	19	12	1,861	923

DANGEROUS AND HAZARDOUS MATERIALS SECTION

Explosives

Two inspections of blasting explosives, detonators and fuses, which were to be landed in Singapore, were carried out on board the ships. On eleven occasions no inspections were done on board ships. However samples of industrial high explosives were forwarded to the Department for statutory testing. Forty-seven samples of such explosives were tested in the laboratory for stability and freedom from exudation of liquid nitroglycerine. All were found fit for importation.

A total of 129 "Form H" certificates were issued to the Police Licensing Officer who would then permit the landing of explosives into Singapore or in the case of transit cargoes the off-loading of the explosives into lighters pending re-loading onto the same vessel or other vessels.

The total number of samples of fireworks examined for the Police was 61 as compared with 46 for last year. Nine samples were fire crackers and were found to contain the permitted explosive composition namely gunpowder. The other samples were fireworks such as firing tape caps, electric sparklers, rockets, etc. Twenty-one of these samples were found to be of the prohibited type because of the presence of prohibited ingredients such as chlorate or phosphorus or the presence of more than one-fifth of an ounce of explosive composition.

Magazines

On behalf of the Police two magazines were inspected for the purpose of renewal of licences by the Police.

Petroleum

The total number of samples tested for flash points was 676 showing a slight decrease when compared with 702 samples for 1964. The 676 samples comprised 201 samples of kerosene, 443 samples of aviation turbine fuel and 32 samples of other type.

Ship Inspection

Under the Petroleum Ordinance, any vessel which has carried dangerous petroleum has to be inspected and certified "gas free" of inflammable vapour before coming to dock or wharf for repairs. A total of 623 ship inspections were carried out for this year as compared with 740 ship inspections for last year, and 824 for 1963. In 27 of these inspections, the vessels were found to be not "gas free" and had to be further cleaned and re-inspected. Thirty-eight of the inspections were in connection with certifying of spaces such as double bottom tanks, settling tanks, bunkers, etc. for freedom from petroleum vapour in toxic amount prior to entry by workmen at the requests of shipping firms or dockyards.

In 17 instances, Inspectors under the Petroleum Ordinance proceeded for inspection but owing to non-arrival or late arrival of the vessels no inspection was possible.

Trade Effluents

Of the 40 samples of trade effluents analysed, 14 were from the Health Officer, 24 from the Royal Air Force, Seletar, and two from a commercial factory. The samples from the Royal Air Force, Seletar, taken from plating shop were submitted for pH and cyanide contents. The minimum and maximum cyanide concentrations found were 0.01 and 0.8 parts per million respectively. The two commercial samples from sedimentation tank and treatment tank respectively were found to be still grossly polluting and not suitable for discharge.

The 14 samples from the Health Officer were taken by Public Health Inspector from various factories. Of these only two trade effluents were found to be suitable for discharge. The others were not suitable for discharge and required treatment or further treatment before discharge in order to obviate pollution.

Inspection and Dangerous Occurrences

In connection with the use of high explosives for blasting concrete structure, earth ridge, rock, etc., four blasting sites were inspected and advice given to the Police.

On behalf of the Chief Inspector of Factories samples of the air in a cement-asbestos factory were taken for dust count. These samples were found to contain particles exceeding the recommended threshold limits.

On three occasions the atmosphere of manholes were examined for the Singapore Telephone Board. Inflammable vapour was detected in two manholes. One of these manholes was situated adjacent to a motor repair workshop.

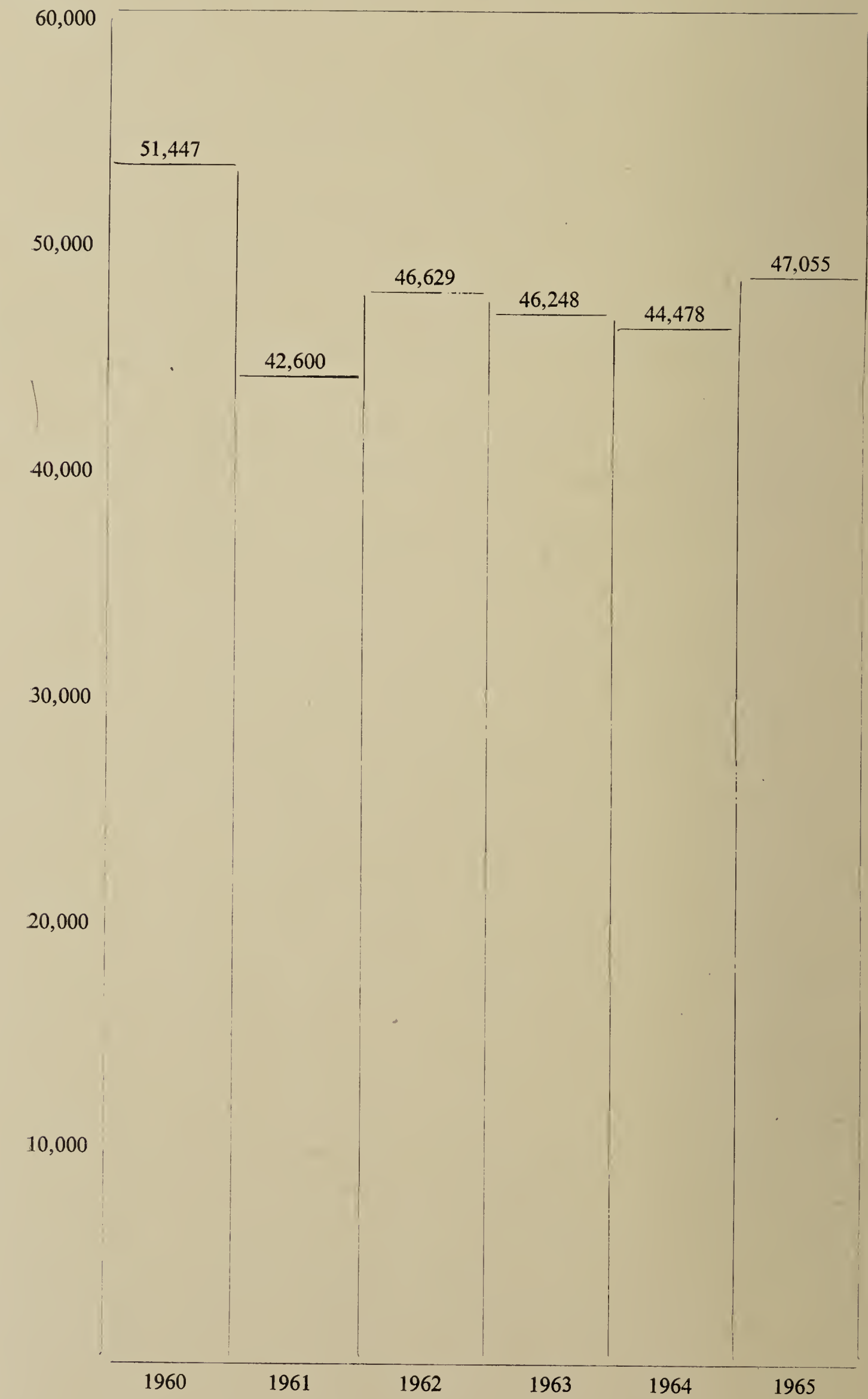
On behalf of the Health Officer, a building worksite was visited and a sample of mud from a trench was found on subsequent analysis to contain traces of tetraethyl lead.

DANGEROUS AND HAZARDOUS MATERIALS SECTION DISTRIBUTION OF WORK 1965

Class of Work	SOURCE							
	Customs	Medical	Police	Public Works Department	Other Departments	Non-Official	Total Samples	Total Cases
Explosives:								
Inspection	131	..	..	..	131	..
Industrial	47	47	..
Fireworks	61	..	..	..	61	..
Magazines	2	..	..	..	2	..
Petroleum Ordinance:								
Flash-point Test	676	676	..
Ship Inspection	623	623	..
Trade Effluents	14	..	..	..	26	40	..
Inspection and Dangerous Occurrences	2	4	..	1	3	10	..
Total	16	198	..	1	1,375	1,590	..

TOTAL SAMPLES ANALYSED
1960 — 1965

Number
of
Samples



STAFF LIST

DEPARTMENT OF CHEMISTRY AND INSPECTORATE OF
DANGEROUS MATERIALS

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Pwee Sye Cheow

Laboratory Technicians — Fourteen (two vacant).

Laboratory Assistants — Three.

Executive Officer:

Ismail bin Ahmad.

Clerical Officers — Four.

Clerical Assistants — Two.

Typists — Three.

Storeman and Packer — One.

Laboratory Attendants, Special Grade — Two.

Laboratory Attendants — Twenty (one vacant).

Office Boy — One.

Watchmen — Three.

Gardener — One.

DISTRIBUTION OF LABORATORY WORK

Sections	SOURCE									
	Customs Department	Medical Department	Police Force	Water Department	Public Works Department	Parks and Recreation Division	Other Departments	Non-Official	Total Samples	Total Cases
Forensic	434	9	2,722	..	..	..	114	305	3,584	647
Health	111	2,585	..	..	..	..	1	89	2,786	1,206
Water and Sewage	..	77	..	19,607	2,932	3,869	2	458	26,945	..
Miscellaneous	2	22	..	120	7	..	1,106	97	1,354	..
Revenue	8,474	..	..	..	..	..	..	461	8,935	..
Toxicology	..	1,370	84	376	..	..	19	12	1,861	923
Dangerous and Hazardous Materials	..	16	198	1	1,375	1,590	..
Total	9,021	4,079	3,004	20,103	2,939	3,869	1,243	2,797	47,055	2,776

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